

CONFIDENTIAL

RESOURCE STATUS AND POTENTIAL
FOR
FOOD AND ALLIED INDUSTRIES IN MAHARASHTRA
(A STUDY REPORT)

for
Maharashtra State Agricultural Marketing Board
Pune



July 1990

Central Food Technological Research Institute
Mysore-570 013.



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Introduction

I. INTRODUCTION

Maharashtra State is an agricultural State and the progress in the production of foodgrains and horticultural produce is noteworthy. However, the progress of any State is related to the optimal utilization of its resources through proper planning and effective application of science and technology for the socio-economic upliftment of the State. Whatever few agro-based industries are existing in the State are run by private enterprises not directly committed to improving the rural conditions. There is a need to commercializing agricultural production with immense potential for massive employment of rural population, rapid industrialization of rural areas, improvement of economic condition of farmers and rural population and a big potential for earning foreign exchange through exports of natural as well as processed food products.

Realizing this fact, the Government of Maharashtra appointed a Committee under the chairmanship of Hon'ble Shri Shankar Rao Kohle to study the marketing of fruit, vegetables and other agro-produce and also the scope for setting up agro-processing units in the State. The committee has recommended a detailed survey of resources of the State and assess the prospects of economic and industrial development based on the above resources. Accordingly the Govt. of Maharashtra through the Maharashtra Agricultural Marketing Board has assigned the task of conducting a study of resources and identification of potential for food and allied industries in all the thirty districts of the State to the CFTRI, Mysore.

The CFTRI has accepted the task with a broad objective :

- (i) Harness the available agricultural, horticultural, fishery and animal resources of the State and promote their conservation and preservation;
- (ii) Promote the optimal utilization of agro-resources through creation of awareness of the opportunities for their exploitation;
- (iii) Promote and assist integrated agro-processing projects for better utilizations of their resources and value additions and
- (iv) Thus promote the dispersal of agro-industries to the rural areas and help in generation of employment, value addition, better utilization of resources and welfare of the rural areas.

A team of CFTRI Scientists undertook the survey work and visited different districts and principle centres of production of agro-horticultural, animal resources in the State, collected the data from primary and secondary sources, market centres, and

discussed the production and marketing constraints and economic consequences.

The findings of the survey work is reported in the subsequent chapters which comprise the survey report viz. resource analysis, infrastructure and present status of "agro processing", "market potentials", "prospects of agro-processing and opportunities", "project identification and techno-economic feasibility" and recommendations.

Maharashtra =

A Profile

II. MAHARASHTRA - A PROFILE

Character	Ref. Year	Unit	Number
General			
Area		Lakh sq. km.	3.2
Districts	1988	Number	30
Population	1981	Lakhs	627
Literacy	1981	Percentage	47.18
Roads			
Road length	1986-87	Kilometer	1,94,136
Electricity			
Installed capacity	1986-87	MW	7,204
Electricity generated	1986-87	Million kwh	30,131
Industrial consumption	1986-87	Million kwh	11,556
Banking			
Number of bank offices	Dec. '86	Number	4,927
Percapita bank deposits	Dec. '86	Rupees	2,685
Percapita bank credit	Dec. '86	Rupees	2,174
State Income			
Percapita at current prices	1986-87	Rupees	3,793
Industry			
Working factories	1986-87	Number	19,966
Average daily employment	1986-87	Thousand	1,150
Workers per lakh population	1986-87	Number	1,741
Percapita gross output	1983-84	Rupees	3,175.5
Percapita value added	1983-84	Rupees	667.8

The other statistical features detailing agriculture, its production, livestock, forests, electricity, banking, etc. are given below in a tabular form :

Item	Unit	1988-89
Agriculture		
Net area sown	'000 Hectare	17,881 (1987-88)
Gross cropped area	"	20,692
Gross irrigated area	"	2,689
Percentage of gross irrigated area to gross cropped area	%	13.0
Area under Principal Crops		
Rice	'000 Hectares	1,545
Wheat	"	879
Jowar	"	6,185
Bajra	"	1,964
All cereals	"	11,092
All food grains (cereals & pulses)	"	14,422
Sugarcane	"	388
Cotton (lint)	"	2,628
Groundnut	"	918
Production under Principal Crops		
Rice	'00 Tonnes	26,521
Wheat	"	10,432
Jowar	"	42,779
Bajra	"	9,005
All cereals	"	93,475

Contd....

Item	Unit	1988-89
All food grains (cereals & pulses)	"	1,10,772
Sugarcane	"	28,151
Cotton (lint)	"	2,335
Groundnut	"	10,056
Index Number of Agricultural Production of Principal Crops (Base: Triennium 1967-70 = 100)		
All commodities		169.7
Agricultural Census*		
Number of holdings	'00 Hectare	81,013
Area of operational holdings	"	2,13,521
Average size of holdings	Hectare	2.64
Livestock**		
Total livestock	Thousand	30,919
Total poultry	"	19,844
Tractors	"	21,453
Forests		
Total forest area	Sq.km.	63,958
Industry		
Factories		
Working factories	Number	21,785
Average daily number of workers	Thousand	1,134
Workers per lakh of population	Number	1,585
Electricity		
Electricity generated	Million kwh	32,835
Electricity consumed (Total)	"	26,260

Contd....

Item	Unit	1988-89
Industrial consumption	"	12,753
Percentage of industrial consumption to total consumption	%	48.6
Number of agricultural pumps energised at the end of	Thousand	1,394
Banking		
Banking offices (Scheduled Commercial)	Number (June 1989)	5,337
Places having banking offices (Scheduled commercial)	" (March 1989)	2,596
State Income		
Income at current prices	Crore Rs.***	3,7481.1
Percapita income at current prices	Rs.***	5,155.1
Employment exchange		
Persons on live register at the end of	Number	26,65,193
Education		
Primary schools	Number	55,568
Enrolment	Thousand	9,960
Secondary schools	Number	8,864
Enrolment	Thousand	5,101
Health		
Hospitals	Number	768
Dispensaries	"	1,799
Beds per lakh of population	"	182
Road Length		
Total	Kilometer	2,05,139
Surfaced	"	1,35,637

Contd....

Item	Unit	1988-89
Motor Vehicles	Number	22,11,265
Cooperation		
Primary agricultural credit societies	Number	18,509
Membership	Thousand	7,025

* Provisional

** 1970-71 and 1980-81, 1985-86 respectively

*** Preliminary Estimates

Resources and Analysis

III. RESOURCE ANALYSIS

The State of Maharashtra is rich in its natural resources. With the advent of 8th five year plan, significant improvement have been broughtout in the State. As in the case of rest of the country, the first priority will be for the integrated development of agro-horticulture resources for the benefit of the local population. Here we are analysing districtwise resources of the thirty districts of the State.

Agro Resources

About 70% of the people in Maharashtra depend on agriculture. About 12.2% of the total cultivated area is irrigated. The principal food crops are jowar, rice, wheat, bajra and pulses like tur, mung, urad. Maharashtra ranks second in oilseed production in the country with its share of 11.7%. Major

oilseeds of Maharashtra are groundnuts, safflower, sunflower, sesame and linseed. Maharashtra shares 15.0% of country's sugarcane production.

The present area under horticulture is around 2.5 lakh hectares, mostly concentrated in a few pockets like Konkan, Western Maharashtra and Central and Eastern part of Vidarbha Region. Now as against this, the State Government has decided to have a great leap forward for organising massive programme for all the districts under horticulture. The total acreage under horticulture by the end of 2000 would be 10 lakh hectares. For ensuring this programme a massive dose of financial assistance is being provided by the State Government from the Employment Guarantee Fund to the extent of Rs.100 crores this year. The production finance of Rs.100 crores will be given 100% subsidy to the cultivators having acreage of 18 acres and below for the purpose of horticulture programme. This incentive of the State Govt. is likely to provide massive and substantial growth of horticulture production in the State.

BHANDARA

A. Agriculture

In Bhandara district the principal food grains of the district are rice (503600 MT), wheat (37200 MT), jowar (2100 MT), gram (6300 MT), tur (5300 MT), linseed (2880 MT). The staple food of the district is jowar, which is grown throughout the district.

B. Horticulture and Plantation Crop

Among the horticultural crop, guava and banana are grown in abundance in Tumsar, Mohadi, Tiroda, Salekasa, Morgaon Anyuni

taluka of the district.

The production of tomato, cabbage and brinjal and sugarcane are quite considerable in the district. Tomato is mainly grown in Tumsar, Paoni, Morgan, Arjuni, Gondia and Tiroda. While cabbage and other vegetables are grown throughout the district.

Forest Product - The major forest produce in the district is the mahua flower, produced to the extent of 3000 MT valued at Rs.4.00 lakhs. Besides, gum, lac, mahua seed and butea seeds are also available.

CHANDRAPUR DISTRICT

A. Agriculture

Paddy is the major crop of the district. Other important cereal crops of the district are jowar, wheat and pulses like tur, gram and udid. The important oilseeds of the district are linseed and soyabean.

B. Horticulture and Plantation Crops

Production of horticulture produce is less compared to other districts in the State. Cultivation of chilli is done in large scale in the district.

C. Forestry

Mahua seeds, mahua flowers and gum are available in large quantities.

GADCHIROLI DISTRICT

A. Agriculture

Like the other districts of the State, this district is

growing cereals like rice and jowar. Among pulses, gram is the major pulses grown, while oilseeds like safflower, sesamum are grown in the district.

B. Horticulture and Plantation Crops

The production of horticulture crops in the district is negligible. Chillies are grown abundantly in the district, approximately the production of which accounts to 5900 MT.

C. Forestry

Forest produce in the district are gum and mahua seeds and flowers. Butea leaves are available in plenty. Although the statistics of Amla (Phyllanthus) is not available, it is reported to be available in plenty in the district.

NAGPUR

A. Agriculture

The principal crops of the district are jowar, wheat, rice, tur, gram, urid, mung, groundnut, soyabean and linseed. The staple food of the region is jowar and is produced throughout the district.

B. Horticulture and Plantation Crops

Nagpur is known for Nagpur oranges (175550 MT) and is concentrated in Nagpur, Narkhed, Katol, Kalmeswar talukas of the district. Besides orange, the other fruits produced to a considerable extent are guava, banana, mango, papaya, mosambi and lime.

The important vegetables produced in the region are chillies (Bhiwapuri), tomato (pusa rubi), brinjal, okra, onion,

potato, sweet potato. Sugarcane is also produced in the region and the production is increasing substantially.

C. Forest

The important forest produce in Nagpur division are gum and custard apples. The palas leaves are available in plenty.

WARDHA

A. Agriculture

The important food grains produced in this district are cereals - jowar, wheat and rice. In pulses, tur is produced to the extent of 38100 MT. The other pulses produced are gram (17800 MT), mung and urid. Groundnut, soyabean, sesamum, linseed are produced substantially. The production of soyabean is increasing remarkably.

B. Horticulture

Oranges, banana, papaya and lime are the important fruit crop of the region. Oranges are produced in Arvi, Asti in Wardha taluka and banana and papaya in Selu taluka. Vegetables produced in the region are tomato, brinjal, chillies and leafy vegetables. Turmeric is produced substantially in Saundrapur. Sugarcane is also produced considerably.

C. Forest

The forest produced in the district is negligible.

AKOLA DISTRICT

A. Agriculture

Jowar forms a major crop in the district. Wheat and bajra are also taken as kharif crop. Among the pulses moderately grown in the district, mung, tur, bengalgram and udid form the major pulses in this area. The oilseeds like groundnut, sesamum and sunflower are of importance in this district. Groundnut is widely grown in Akola and Mangrulpur regions.

B. Horticulture

Nagpur oranges, occupy a major area under fruits in this district. Limes are also cultivated to some extent. Banana, mango and guava are cultivated to a limited extent. Among the vegetables, onion occupies a considerable area of cultivation. Sugarcane, betel leaves, chilli are also the main irrigated crops of the district.

C. Forest Produce

Among the major forest produce, gums collection occupies a place of importance in this district. Honey, tamarind, jambul and ber are also available from the district forests.

AMRAVATI DISTRICT

A. Agriculture

Jowar is the only crop of importance in this region. Wheat, bajra and paddy are cultivated to a some extent. Among the pulses, tur, bengalgram and mung are the major ones. Udid is cultivated to some extent. The oilseeds of importance in the district are groundnut and soyabean. Safflower is produced to some extent.

B. Horticulture

Nagpur oranges occupy an important place in this district, which is cultivated extensively. Banana, lime, mango and guava are the other fruit crops that are cultivated here. Among the vegetables, onions are cultivated extensively in this district and next is tomato. The cultivation of chilli is abundant in Daryapur, Achalpur, Morshi, Amraoti and Varud regions. Sugarcane and betel leaves are other irrigated crops of the district. Except in hilly regions, there are plantations of betel leaves in almost all the parts, mainly in Achalpur, Chandurbazar, Anjanagaonsurji and Badnera. The gardens of bananas, oranges and sweet limes are on the increase in Morshi and Varud regions. At Chikhaldara coffee is grown in Government coffee plantation.

C. Forest Produce

Gum, mahua, charoli are the minor forest produces obtained from the district forests.

BULDHANA DISTRICT

A. Agriculture

The major crop of the district is jowar. Bajra and wheat also are taken on a moderate extent and rice is grown to a limited extent. Tur forms the major pulse crop of the district. Other pulses like mung and udid are also produced in the district. Safflower and sunflower form the major oilseeds of the district. Groundnut is also grown as an oilseed crop.

B. Horticulture

Banana is extensively grown in this district. Guava, orange, lime are the other fruits that are grown here. Onion is

extensively grown here and ranks first in the State in its production. Chilly is next of importance. Tomato is other vegetable of importance in this district.

C. Forest Produce

Bhilawa and gum are the products available in district forests.

YEOTMAL DISTRICT

A. Agriculture

Foodgrains like jowar, wheat, bajra and rice are the principal cereals grown in the district. Among pulses, tur, moong, gram and urid are worth stating. Groundnut is the main oilseed crop grown followed by sunflower, sesamum and linseed. Soyabean production has also started in the district.

B. Horticulture

This district grows horticultural crops like orange, banana, mango and guava in appreciable quantity. Among vegetables, brinjal, onion, chillies and tomato are the major one. Orange orchards are mainly in Dabha, Pahur, Ralegaon and Zadgaon area. Betel leaves are grown in Daruha, Digras, Ladkhed, Virul, Umarkhed. Mango cultivation is mainly in Yavatmal, Ghatangi, Arni and Ner. In summer, pumpkin and melons are grown in some of the river beds.

C. Forest Produce

Among forest resources, gum is estimated to be available in large quantities valued to approximately one lakh. Other forest produces of the district are honey and mahua flowers.

AURANGABAD DISTRICT

A. Agriculture

The major crops of the district are Rice, wheat, jowar (kharif and rabi) and bajra among cereals and millets. Tur, moong and bengalgram among pulses, groundnut, safflower and sunflower among oilseeds. Sugarcane and cotton are other important crops of this region. Jowar is grown in Khuldabad, Sillod, Kannad, Soigaon, Paithan Talukas. Next to jowar, Bajra is the most important crop in the district. It is cultivated all over the district. It is grown widely in Vaijapur and over large areas in Aurangabad. Kannad, Sillod and Paithan talukas.

Wheat is one of the important rabi crops. Wheat is grown in large quantities in the Vaijapur and Khuldabad talukas. Some areas in Gangapur, Kannad and Paithan talukas also grow wheat.

Tur, gram, blackgram (Udid), math, mung, etc. are generally grown along with the main crops or cotton. But gram and tur are often grown separately as main crops. Tur is a kharif crop and gram is a rabi crop.

Pulses are grown in all the talukas. However, in Aurangabad, Vaijapur, Sillod and Gangapur regions they are grown on a large scale.

In Kannad, Sillod and Aurangabad talukas oilseeds are cultivated on large scale. Kardai is mainly grown in the Gangapur, Vaijapur and Kannad talukas. Kardai is a rabi crop.

B. Horticulture

Fruits - Bananas are a major fruit crop in the district. Bananas are grown mainly in Kannad and Soygaon talukas. There are many grape vineyards in Aurangabad and Vaijapur areas. At some places there are orchards of oranges, sweet lemons, chikkus, guavas and pomegranates. The custard-apples and guavas of Daulatabad are very well-known. In the district, there are also many mango groves. Mangoes of Phulambri, near Aurangabad are well-known. The other talukas, where mango groves are found are Kannad, Khuldabad and Aurangabad. There is a fruit research centre in Aurangabad.

Vegetables - Vegetables are grown in plenty in the district. Most of the vegetables are sold in the town and the cities. Brinjal, beans, pumpkin, tomato, cabbage, bittergourd (karella) and ladies finger (bhendi) are grown in the district. In some places onions and garlic are grown on a large scale. Sillod, Paithan and Kannad talukas are known for the production of chillies.

Banana is the only fruit crop that is cultivated to some extent in the area and other fruit crops are negligible. Among the vegetables, chillies occupy a larger area and potato is also cultivated to some extent.

C. Forest Produce

Gum, Bhilawa and honey are the minor forest product that is produced in the area.

BEED DISTRICT

A. Agriculture

Jowar is the only major cereal crop cultivated in this district and followed by wheat, maize and rice. Substantial quantities of tur, gram and moong are produced. The major oilseeds produced are sunflower and safflower and followed by groundnut, linseed and til.

B. Horticulture

The major fruit crops are mango, banana, ber, custard apple, papaya and lime. Tomato is cultivated extensively in this district. Considerable quantities of onions and potatoes are cultivated. Cultivation of coriander, chillies, turmeric and ginger is also good.

LATUR DISTRICT

A. Agriculture

In Latur district, the important cereal crop is sorghum (226600 MT). Besides sorghum, other cereals produced in considerable quantities are wheat, rice and bajra. Under pulses, tur is produced in abundance. Besides tur, other pulses grown are gram, urid and mung. Sunflower is an important oilseed crop of the district. Other important oilseeds produced are groundnut, safflower and sesamum.

The major horticultural produce of the region are mango, grapes, ber and pomegranate. Besides these, lime, banana, guava, sapota are also produced. Banana is cultivated in Latur, Ausa, Nilanga and Udgir regions.

The vegetables such to-ato, onion, potatoes, chillies, okra are grown to a considerable extent. Sugarcane is produced in Ausa, Latur and Ahmedpur regions. Turmeric also is grown in some areas of the district.

JALNA DISTRICT

A. Agriculture

The principal crops grown are jowar, wheat and bajra among cereals; urid, tur and gram among pulses; and safflower, sunflower and groundnut among oilseed.

B. Horticulture

The major horticultural crops are orange, papaya, pomegranate and lime grown mainly in Ambad, Jalna, Jafrabad and Portur talkus of the district. Among vegetables, tomato, chilli, capsicum and cauliflower are grown in large quantities. Among plantation crops, ginger is cultivated in the district.

NANDED DISTRICT

A. Agriculture

Foodgrains constitute the predominant crop of the district. Jowar is the principal crop followed by bajra, wheat and paddy. Maximum jowar is grown in Hadgaon taluka. In the sector of pulses, tur, moong, urid and gram are grown in substantial quantities. The oilseeds crops like safflower, sunflower, mentioning.

B. Horticulture

The main horticultural and plantation produce of the district are papaya. Guava, banana, orange among fruits, tomato,

onion, potato and ladies finger among vegetables; and tamarind, chillies and turmeric among plantation products. Banana cultivation is mainly in Nanded taluka. Sugarcane is cultivated mainly in Nanded and Kandhar talukas and its cultivation is increasing. Grape gardens are on increase in Mudkhed, Biloli talukas in the district. Betel leaves are grown in Barad and Kandhar talukas. Mahur and Sindkhed regions produce custard apples.

PARBHANI DISTRICT

A. Agriculture

The cereals like wheat, jowar, paddy and bajra are grown throughout the district. Jowar is the principal crop in the district. Among the pulses, tur and gram grown in large quantities. Safflower, sunflower and groundnut are mainly grown as oilseeds.

B. Horticulture

Among the horticultural crops banana, orange, lime, mango, guava and sapota are grown in large quantities. Tomato, onion and potato are also grown in large quantities in the district. Among the plantation crops, coconut, turmeric and tamarind are also worth mentioning.

C. Forest Produce

Forest produce are not much of attributes in the district.

USMANABAD DISTRICT

A. Agriculture

Jowar is cultivated extensively in this district and

followed by wheat, rice and maize. The important pulses are tur, gram, moong and udid. Among these pulses, tur is major pulse. The production of oilseeds are considerably good in this district. The main oilseeds produced are sunflower, safflower, groundnut and small quantity of til is also produced.

B. Horticulture

Grapes, pomegranate, guava, mango, ber and limes are prominent fruits cultivated in this district. There is lot of scope for the cultivation of grape, pomegranate, ber and mango in future. Considerable quantity of tomato is produced and some extent onion and potato is also cultivated. The production of chillies, coriander is fairly good and some extent garlic and turmeric is also cultivated.

AHMEDNAGAR DISTRICT

A. Agriculture

Jowar, bajra and wheat, the major cereal crop of the district are cultivated abundantly. Maize and rice are also cultivated to some extent. Among pulses, gram is the major pulse; moong and tur are also cultivated considerably. The oilseed crops like safflower, groundnut and sunflower are extensively cultivated. Bajri is cultivated mainly in Sangamner, Akole, Parner, Pathardi, Ahmednagar, Srigonde and Jamkhed talukas. Rahuri, Ahmednagar, Srirampur, Kopargaon, Newase, Shevgaon, Srigonde and Karjat tehsils produce jowar, wheat and gram. Akole, Rajur and Kotul are known for the rice production. Parner is major wheat growing taluka of the district.

B. Horticulture

The area under horticultural crops in this district is very prominent. The district ranks first in sugarcane production in the State. The fruits that are cultivating are lime, ber, pomogranate, guava, mosambi, mango, sapota, orange, custard apple, banana and papaya. Among these, lime, ber, pomegranate and guava are extensively grown. Onion grown extensively in this district. Cultivation of brinjal and tomato is also good. Mosambi cultivating tahsils of the district are Rahuri, Kopargaon, Ahmednagar, Srirampur, Shevgaon and Pathardi. Grape cultivation in the district is also increasing rapidly.

C. Forestry

Negligible quantity of honey and mahua are available.

DHULE DISTRICT

A. Agriculture

Jowar is a prominent crop in the district, followed by bajra, wheat and rice. Maize is also cultivated in some quantity in district. Mung and udid form important pulses grown in this district. Tur and gram are also grown to some extent. Groundnut and sesame are the major oilseed crops of this district. The other crops like safflower and sunflower are produced in negligible quantities. Rice is cultivated in Sakri, Navapur and Akkalkuwa talukas. Shahada region features for wheat cultivation. Groundnut, udid, mung, jowar, bajra, sesame are grown mainly in Shirpur, Shindkheda, Dhule, Sakri and Nandurbar Talukas.

B. Horticulture

Banana, grapes and papaya are the major fruit crop in this district, and their cultivation is increasing. Banana cultivation is mainly in Shirpur, Shahada and Nandurbar talukas. Sakri is the major grape growing taluka. Guava and mango are also grown in the district. Cultivation of ber, pomegranate in the district is on increase. Shindkheda, Sakri, Dhule and Shirpur talukas of the district grow vegetables like onion, brinjal, cauliflower, ladies finger, gourds, leafy vegetables, which are transported to Indore, Surat and Bombay markets in substantial quantities. Dondaiche area in Shindkheda district is famous for Dondaiche variety of chilli.

c. Forest Produce

Forest prouces collected from district forests are mahua flower, mahua seed, charoli, gum, honey and awla.

JALGAON DISTRICT

A. Agriculture

Jowar is a major crop in this district and this district ranks 2nd in the State, being only next to Akola district. The next prominent crop is bajra, followed by wheat and rice. Mung, udid and tur are the pulses grown in this district. The oilseed crops of importance are groundnut, safflower and sesame.

B. Horticulture

This district is known for cultivation of banana and occupies first place in the State. Papaya is of next importance. Orange, lime and guava are other fruits of importance in this

area. Among the vegetables, onion, chillies and tomatoes are notable crops here. Banana cultivation is mainly in Raver, Yawal, Jalgaon and Chopda talukas. Betel leaves cultivation is in Bhusawal taluka.

NASIK DISTRICT

A. Agriculture

Foodgrains like bajra, wheat, jowar and rice are grown abundance in the district. Ragi is also grown in the district in the region of Nasik, Dindori and Igatpuri. Among pulses, tur, udid and moong are the major pulses grown in the district. Among oilseed, groundnut is having the highest production. Surgana, Igatpuri, Peth and Nasik are the rice growing areas. Wheat is grown in Niphad, Sinnar, Dindori and Nasik talukas. Satana, Malegaon, Nangaon and Yeola are the major groundnut producing talukas. Bajra is grown mainly in Malegaon, Chandvad, Yeola, Niphad and Sinnar talukas.

B. Horticulture

In the horticultural crops, grapes, guava, mango and lime are grown in large quantities in the district. Production of ber and pomegranate has also taken a good shape in recent years. In the plantation crops, tamarind is grown in abundance, followed by coconut and cashewapple. Onion and tomato are main vegetable crops grown in the State. Besides, potato, chillies, cauliflower, brinjal, ladies finger are also grown in the district. The district produces about 15-18% of the country's total grape production. The famous Thompson seedless variety grown in Nashik find special favour in markets all over the country. Area under

grapes is constantly increasing. In last five years, it has doubled. Nashik district is surplus in onion, vegetables and grapes. It produces about 15% of the total country's onion. In last few years, area under vegetables have gone up multi-fold. Bombay provides the major market besides Nashik and Surat for fresh vegetables of the district. Nashik, Dindori, Niphad and Chandvad are the major vegetable growing talukas.

KOLHAPUR DISTRICT

A. Agriculture

Rice, jowar and wheat are the major crops of the districts. Tur, mung and udid are the pulses that are produced here. Among the oilseeds, groundnut is the crop of importance. Rice growing talukas of the district are Gargoti, Ajra, Chandgad, Radhanagari, Kolhapur and Panhala. Jowar is grown in Shirole, Hatkanangale, Kagal, Kolhapur and Gadhinglaj talukas, Shalu (rabi jowar) is grown in Hatkanangle, Karveer, Panhala, Shirol and Shahuvadi talukas. Gadhinglaj, Ajra, Hatkanangale, Karveer, Kagal, Panhala region grows groundnut. Gram is cultivated in Shirol, Shahuvadi, Gadhinglaj and Hatakanangale talukas.

B. Horticulture

Banana, mango, guava and grapes are the fruits that are cultivated in this district. Cashew and coconut are taken on a small extent. Among vegetables, chillies and potatoes are of importance. Sugarcane and turmeric are the other irrigated crops of the district.

SATARA DISTRICT

A. Agriculture

In the district, the cereal crops grown are mainly jowar, rice, bajra and maize, while gram, urid, moong and tur are among pulses. Among oilseeds, groundnut, safflower and linseed are grown in large quantities. Satara, Koregaon and Karad talukas grow jowar. Major bajra producing talukas are Khatao and Man. Rice is grown mainly in Patan and Jawali. Karad, Koregaon, Satara and Patan Talukas produce groundnut.

B. Horticulture

Guava, grapes, banana and pomegranate are the major fruits grown in the District. Vegetables like tomato, onion, potato are the main crops grown in substantial quantities. Coconut, ginger and turmeric are the major plantation crops grown in the district. Potatoes are cultivated in Man and Khatav talukas. Major onion producing taluka is Khandala. Phaltan is known for grapes. Gote (Karad) is famous for brinjals. Cultivation of ber in the district is on increase.

SOLAPUR DISTRICT

A. Agriculture

Agriculture is the predominant economy of the district. Salient among them are jowar, bajra, wheat and rice. Among pulses, gram, moong and tur are grown most. Groundnut, sunflower and safflower are the major oilseed crop. Jowar is grown throughout the district with Mangalvedhe taluka ranking the first. Malsiras, Sangole and Karmale are major talukas producing bajra.

B. Horticulture

The horticultural crops grown in the district are grapes, ber, pomegranate, mango, guava, orange, sugarcane and banana. Among vegetables, onion, tomato and chillies are grown in large quantities. In the plantation crops, tamarind and turmeric are grown in the district. Coconut is also grown in the district in large quantities. The district ranks first in the production of pomegranates and ber. Malsiras, Sangola, Pandharpur, Solapur are the major fruit and vegetable growing talukas. Some cooperative fruit producers associations in the district are sending grapes, pomegranates and ber in the markets throughout the country.

PUNE DISTRICT

A. Agriculture

Jowar is the major crop of this district, followed by rice, bajra and wheat. Compared to other districts of the State, this district has a prominent place for production of wheat and rice. Mung, urad and tur are the pulse crops taken in the district. Groundnut is the major oilseed crop of this district and ranks third in the State, the other districts being Kolhapur and Satara districts. Safflower is another important oilseed crop of the district.

B. Horticulture

The district produces fruits like mango, grapes, guava, papaya, orange, lime, pomegranate, custardapple and sapota. Ber cultivation in the district is increasing. Tomato, potato, onion, brinjal, gourds, leafy vegetables are grown in the district. Garlic production in the district is noteworthy.

THANE DISTRICT

A. Agriculture

The production of cereals, pulses and oilseeds are far from satisfactory in the district. Among the cereals, paddy is the main crop, while for pulses, tur, urid and gram are worth mentioning. Groundnut is the major oilseed crop grown in the district. Major paddy growing talukas are Palghar, Bhiwandi, Dahanu, Shahapur, Wada and Murbad. Besides paddy, nachani and vari are the other cereals grown in the district.

B. Horticulture

The district grows large quantities of vegetables, fruits and flowers. Coconuts, mangoes, bananas, sapota are the speciality of the district. Bananas from Vasai and Chiku from Dahanu-Gholvad are very famous. A lot of these go to Bombay. Other fruits and vegetables grown in the district are guava, papaya, onion, brinjal, tomato, cabbage, etc.

C. Fisheries

Being a coastal district and having a coastal length of 112 km, there is a good scope for marine fishery here.

RAIGAD DISTRICT

A. Agriculture

Paddy is the most important cereal crop in the district and is grown abundantly. The production is approximately 25500 MT. Other cereals like jowar, bajra and ragi are also grown in the district, but their production is very negligible. Pulses like gram, tur, udid, moong are also grown here.

B. Horticulture

The horticultural and plantation crops in the district are mango, guava, sapota, melons, coconuts and arecanut. Srivardhan is famous for arecanut and Panvel for watermelons Alphonso is the major variety of the district.

C. Fisheries

Being a coastal district and having a coastal length of 240 km, there is a good scope for marine fisheries here.

RATNAGIRI DISTRICT

A. Agriculture

The main food grain products are rice and ragi. The pulses grown are tur, blackgram and horsegram. The oilseeds grown are groundnut and sesamum. Rajapur, Sangameshwar, Chiplun and Khed are the main rice growing talukas.

B. Horticulture

This district is known for mango cultivation and the alphonso variety that is grown here is famous throughout. The other fruit crop is jackfruit, which is also grown extensively. Next is coconut, which is also grown on a larger extent in Dapodi, Guhagar, Ratnagiri and Rajapur talukas. Banana, lime, papaya, tamarind, jamun, sapota, awla, ber, karvand, etc. are the other fruits produced in the district. Cashew is produced mainly in Dapoli, Guhagar and Ratnagiri talukas. Arecanut production of the district is also in notable quantity.

C. Fisheries

With a long coastal length (245 M) in the district there

is a good scope for fisheries as the marine fish catch in the district is more here.

D. Forestry

Kokam is available in substantial quantity in the district, particularly in Sawantwadi area.

SINDHUDURG DISTRICT

A. Agriculture

Rice and groundnut are the principal crops of this district. Nachani and Wari are the other cereals grown in the district.

B. Horticulture

Mango, jackfruit and kokam are the major fruits of the district. Coconut, arecanut and cashewnut are the plantation crops extensively cultivated in this district. Vengurle and Devgad are main mango growing talukas. Banana, papaya, sapota, jamun and karvand are the other fruits of the district.

C. Fisheries

The district has a coastal line of 121 km and has a good scope for marine fishing.

AGRICULTURAL PRODUCTION

The production of various agricultural commodities like cereals and millets, pulses, oilseeds, spices and condiments, fruits and vegetables in the State are tabulated districtwise. The agricultural crops adopt themselves for a particular type of climate, soil condition and the irrigation facilities available. Therefore, it can be observed that the individual crop or commodity assumes a definite trend in their production and thus form a pocket or belt of concentration. Hence, the pattern is depicted in the maps given for individual crop. Depending upon the concentration of these commodities, processing industries can be put up in these districts to cater to the needs of an individual district where the production is more in two to three districts where the production is to a lesser extent.

AGRICULTURAL PRODUCTION IN MAHARASHTRA
(CEREALS & MILLETS)

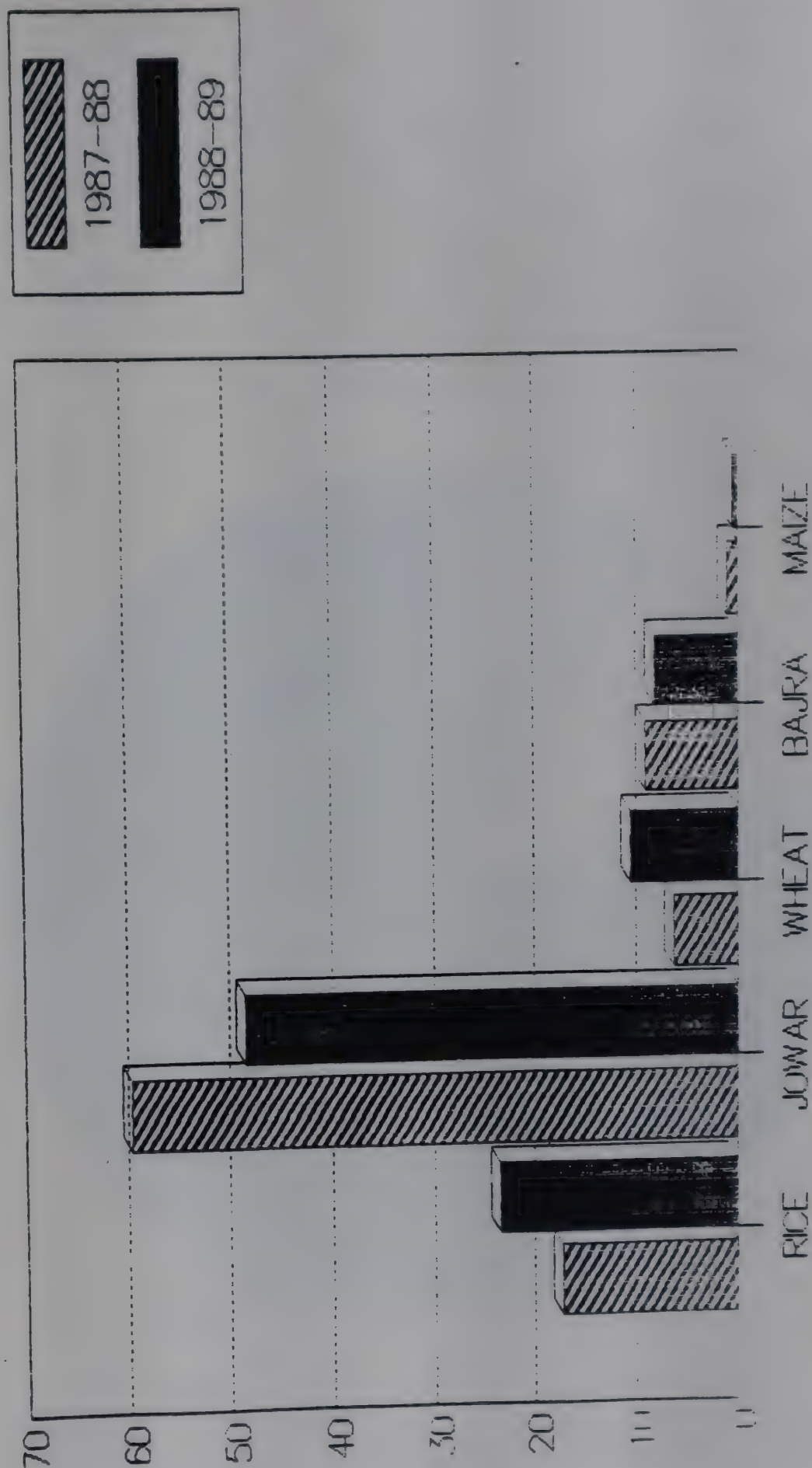
(PRODN IN 00 MT)

DISTRICTS	RICE		JOWAR		WHEAT		BAJRA		MAIZE		TOTAL CEREALS	
	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89
1 BHANDARA	968	5036	101	21	167	372					1250	5429
2 CHANDRAPUR	1058	1577	856	1151	157	307			2		2082	3035
3 GADCHIBOLI	1062	2128	158	68	31	13					1279	2267
4 NAGPUR	317	736	1544	1523	405	692	2				2268	2951
5 WARDHA	90	78	1047	1008	148	256	3				1217	1342
6 AKOLA	41	26	4592	3124	212	300	25	45	4		4887	3495
7 AMRAVATI	77	39	2492	1605	253	436	18	15	3		2895	2140
8 BULDHANA	13	15	3634	2948	55	358	69	54	11		3782	3375
9 YATMAL	42	53	3037	3790	98	196	64	74	2	1	3243	4114
10 AURANGABAD	11	39	2393	2025	204	674	1067	1001	18		3732	3739
11 BEED	27	39	3070	3191	180	328	668		18	41	3991	3599
12 LATUR	78	221	2989	2266	151	347	38	59	7		3237	2893
13 JALNA	10	9	1854	2228	277	599	427	418	22		2590	3246
14 NANDED	95	302	3567	4255	150	411	2		6		3823	4988
15 PARBHANI	149	110	3110	1200	344	743	59	35	11		3682	2688
16 USHANABAD	47	108	2470	1642	111	242	63	68	9	44	2800	2104
17 AHMADNAGAR	81	98	3130		481	1090	683	1770	44	49	4518	3007
18 DHULE	126	190	1388	1644	235	312	953	1098	517	186	3549	3547
19 JALGAON	52	52	4440	4550	481	465	1658	964	10	9	6662	6840
20 NASHIK	313	469	563	686	635	1074	1856	2109			3878	4338
21 KOLHAPUR	1872	1515	1028	1066	236	104	1	1	63		3673	4007
22 SANGLI	297	270	2816	2760	166	227	288	167	132		3739	3424
23 SATARA	659	857	2593	2710	235	423	499	338	27	17	4154	4345
24 SOLAPUR	21	64	3652	2929	348	647	64		167	185	4266	3825
25 PUNE	723		3067		574		589				5159	0
26 THANE	2875	2916							1	1	3083	2917
27 RAIGAD	3070	3224							1		3324	3224
28 RATNAGIRI	1579	1710							2		2120	1710
29 SINDHODURG	1481	1557									1614	1557
30 GR BOMBAY											0	0
TOTAL MAHARASHTRA	17234	23436	59511	48382	6334	10616	9096	8216	1073	533	96497	92666

Note: Blank space in the column indicates data not available.

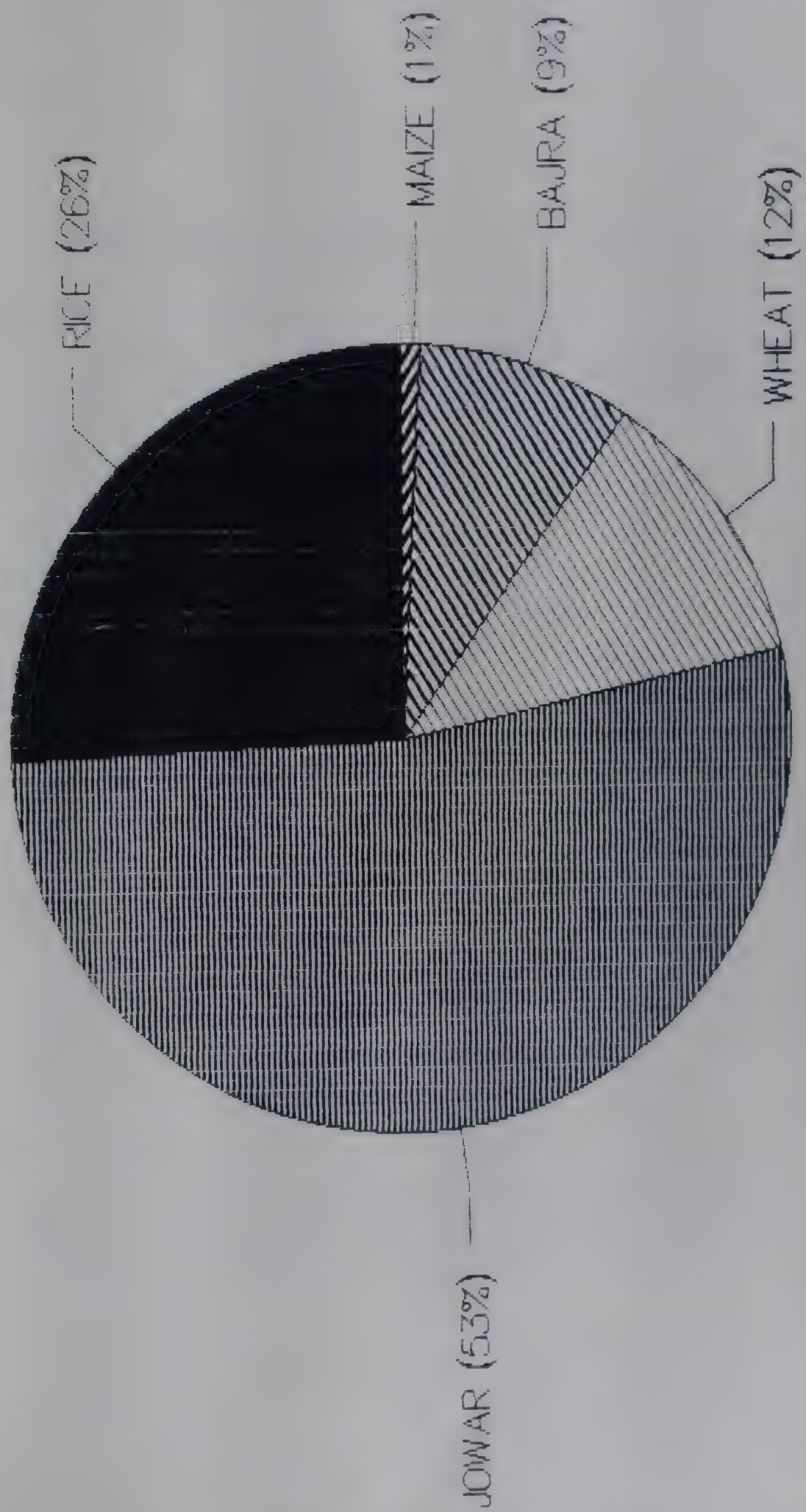
Production of Cereals & Millets

in Maharashtra



(THOUSANDS OF TONNES)

Area of Cultivation of Cereals & Millets in Maharashtra (1988-89)



AGRICULTURAL PRODUCTION IN MAHARASHTRA
(P U L S E S)

(PROD IN 00 MT)

DISTRICTS	TOOR		MOONG		GRAM		ODID		OTHER PULSES		TOTAL PULSES	
	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89
1 BHANDARA	55	53	2	2	33	63	1	5	69	147	160	270
2 CHANDRAPUR	112	130	11	27	22	104	11		118		272	261
3 GADCHIROLI	5	8	2	4	10	27	5	2	48	77	70	118
4 NAGPUR	232	242	8	15	54	213	7	24	59	14	360	508
5 WARDHA	359	381	44	19	28	178	9	4	21		461	582
6 AKOLA	622	596	338	332	111	108	157	174	106		1334	1596
7 AMRAVATI	620	867	153	333	63	221	45	36	27	6	908	1463
8 BULDHANA	375	514	186	260	56	170	165	172	32	34	814	1150
9 YETMAL	562	756	163	107	22	54	80	52	8		835	941
10 AURANGABAD	126	257	209	366	141	209	40		30		546	832
11 BEED	188	285	143		91	168	50		68	118	540	569
12 LATUR	358	597	144	94	83	267	208	222	53		846	1180
13 JALNA	190	199	268		44	79	71		104	350	677	628
14 NANDIED	371	372	138	120		60	371		153		710	552
15 PARBHANI	425	568	451		137	191	109		89	87	1211	846
16 USHANABAD	297	392	160	161	134	290	163				708	843
17 AHMADNAGAR	32	73	19	78	184	302	3	4	48		286	457
18 DHULE	82	124	157	267	126	108	190	154	86		641	730
19 JALGAON	99	141	233	834	177	319	340	422	54		903	1716
20 NASIK	40	53		26		284		42	336	212	376	617
21 KOLHAPUR	18	22	4		57				40	54	119	76
22 SANGLI	40	89	7		100	105	44		88	1027	279	1221
23 SATARA	28	55	29	18	89	89	35	19	110	183	291	364
24 SOLAPUR	73	155	6		176	226	2		81		338	381
25 PUNE	13								274		287	
26 THANE	17	26	6		10	5	13		27	50	73	81
27 RAIGAD	10	10	4		9		11		17		51	10
28 RATNAGIRI	2	2	1				6		18		27	14
29 SINDHODURG			1				4		11	15	16	15
30 GR BOMBAY												
MAHARASHTRA	5351	6967	2887	3063	1957	3840	2140	1332	2173	2372	14139	18021

NOTE: Blank space in the column indicates data not available.

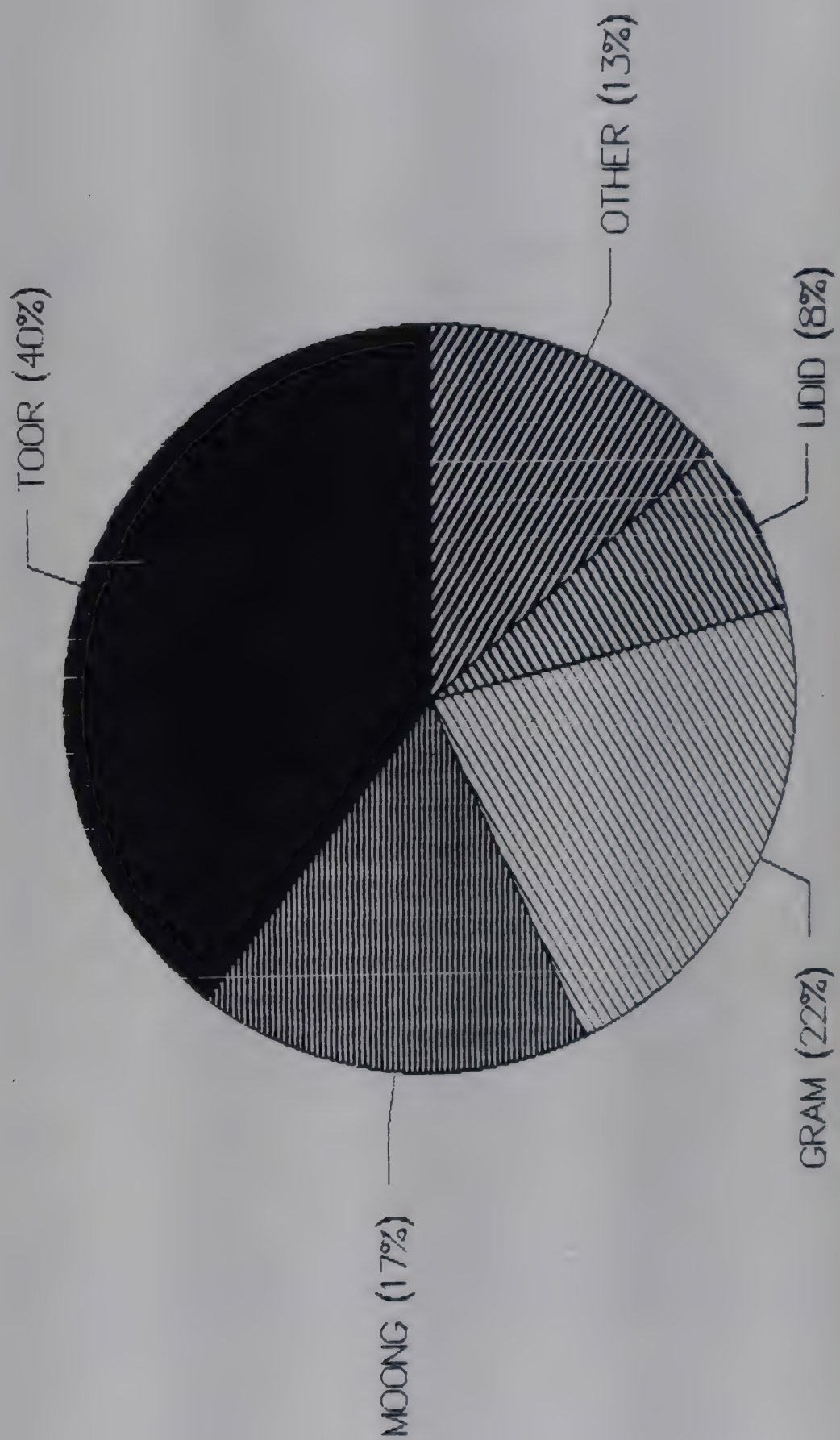
Production of Pulses

in Maharashtra



Commodity

Production of Pulses in Maharashtra (1988-89)



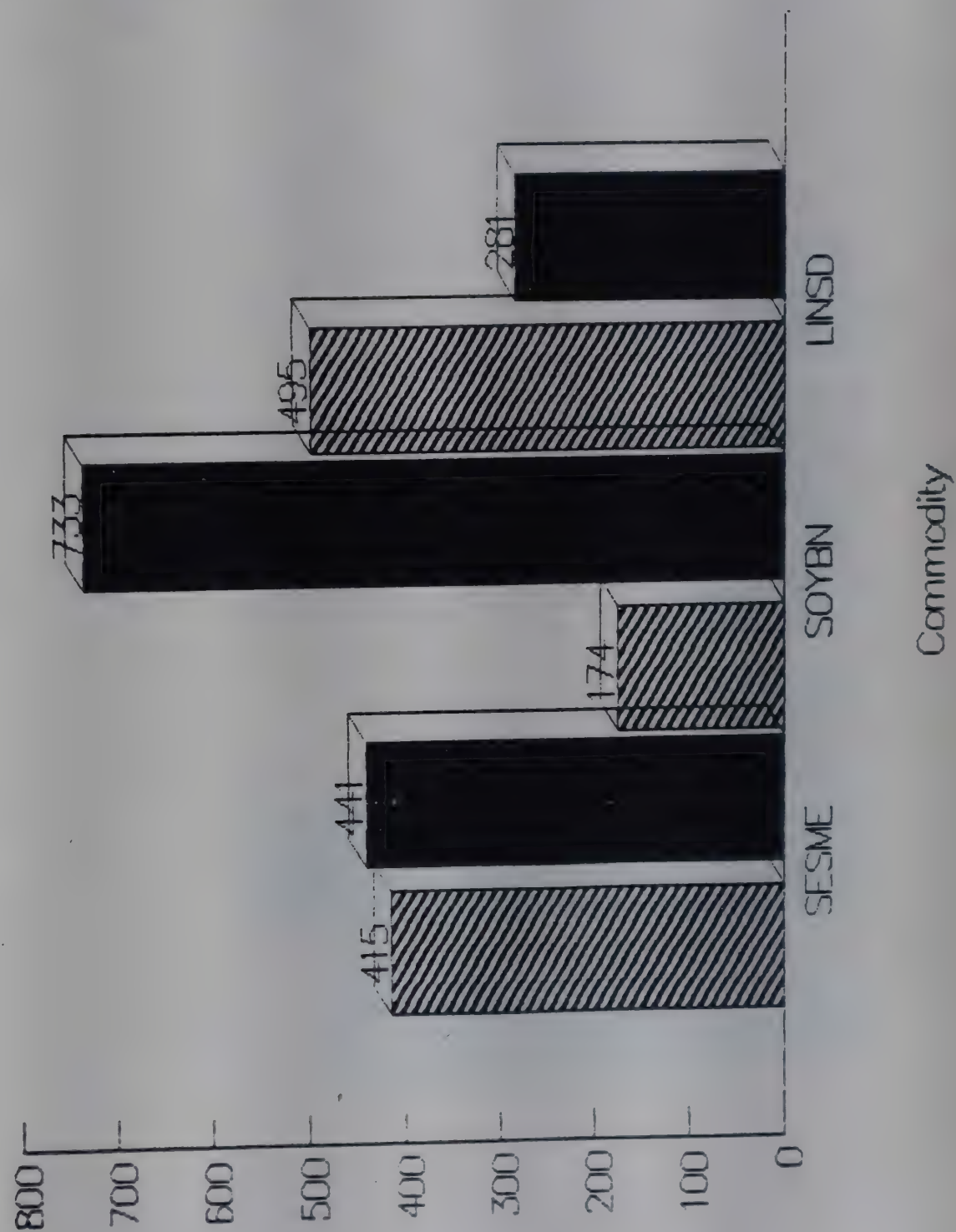
AGRICULTURAL PRODUCTION IN MAHARASHTRA
(OILSEEDS)

(PROD. IN '00 MT)

DISTRICTS	GROUND NUT		SESAME		SAFFLOWER		SUNFLOWER		SOYABEAN		LINSSEED		TOTAL OILSEED	
	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89	1987-88	1988-89
1 BHANDARA	18	21	4	12			2		5	15	37	29	72	79
2 CHANDRAPUR	6			38						63	57	108	142	209
3 GADCHIROLI	1	1	24	19		1	1				11	11	35	33
4 NAGPUR	158	197	36	21					169	519			407	737
5 WARDHA	107	183	65	24		6	4	35		66	24	19	227	313
6 AKOLA	64	165	31	11	122	150	134	165			8		371	491
7 AMRAVATI	174	288	34	6	7	29	12	9		58	19	2	289	392
8 BULDHANA	89	70	29	84	226	188	180	103					538	444
9 YETMAL	83	120	13	15	6	7	95	112		7	12	10	234	271
10 AURANGABAD	57	89	9		361	236	23	68			69	36	522	429
11 BEED	136	143	18	16	369	208	169	235			66		777	602
12 LATUR	191	260	29	4	147	154	361	841			30		796	1259
13 JALNA	50	31	5		358	324	51	67			24		491	422
14 Nanded	125	475	18	20	107	90	145	144			10	15	424	744
15 PARBHANI	313		21		477	384	113	108			45	51	983	543
16 USMANABAD	180	186	20	9	235	259	275	259			51		807	713
17 AHMADNAGAR	190	115	2	4	294	545	106	85			11		607	749
18 DHULE	615	1110	44	47	20	16	4	5					689	1187
19 JALGAON	471	723		100	133	140	11	19					697	982
20 NASHIK	251	406			10	5	4	6			11		328	417
21 KOLHAPUR	1002	1091											1024	1091
22 SANGLI	523	482			25	68	14	2					585	552
23 SATARA	970	960			33		4	9		5			1013	974
24 SOLAPUR	550	805	3		120	120	237	209			10		924	1134
25 PUNE	595				228		7						845	0
26 THANE	7	10	5	5									22	15
27 RAIGAD	3	3	4	6									14	9
28 RATNAGIRI	6	4											42	21
29 SINDHODURG	24	27	1										53	27
30 GR BOMBAY														
MAHARASHTRA	6959	7945	415	441	3278	2930	1949	2484	174	733	495	281	13958	14839

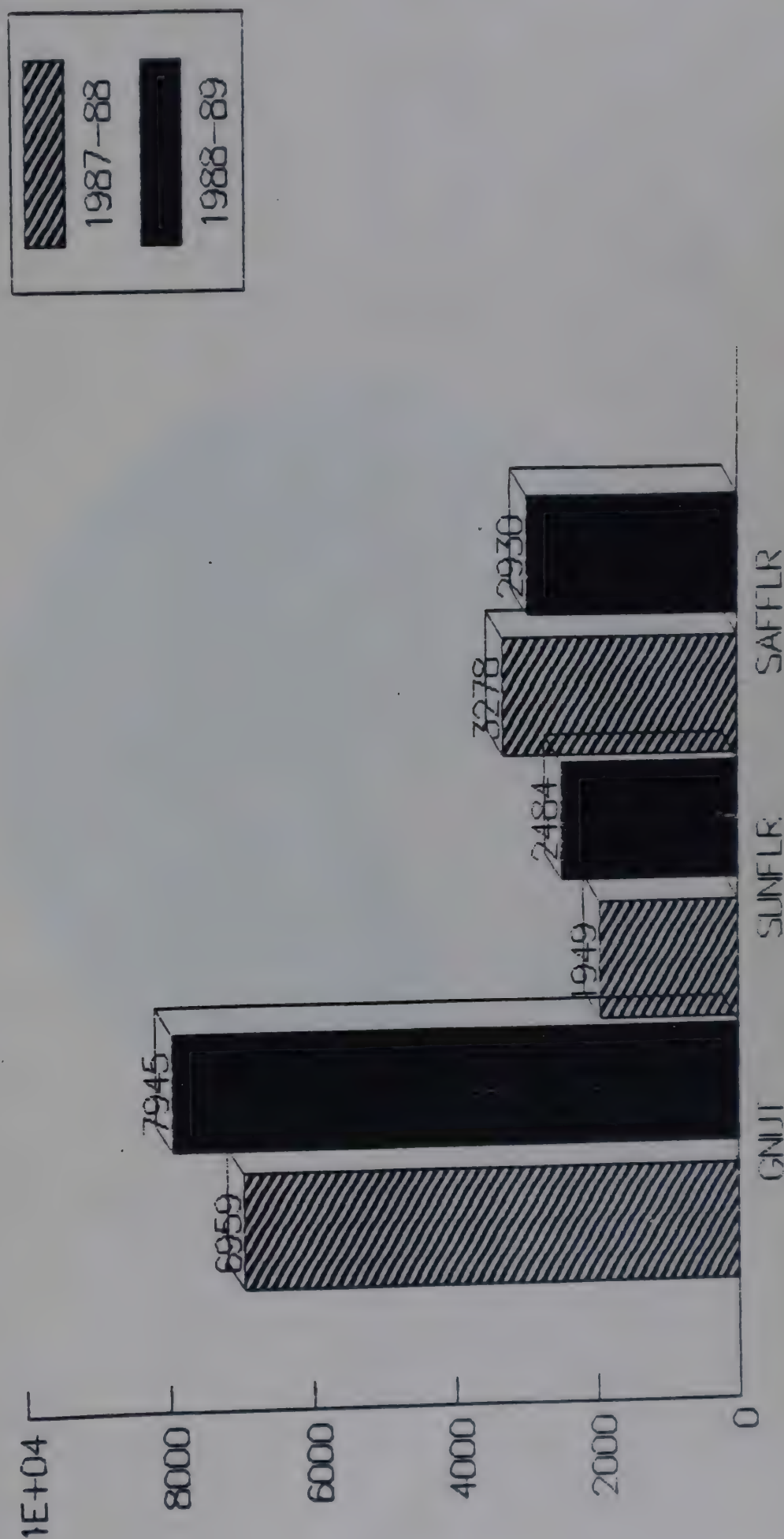
NOTE: Blank space in the column indicates data not available.

Production of Oilseeds in Maharashtra

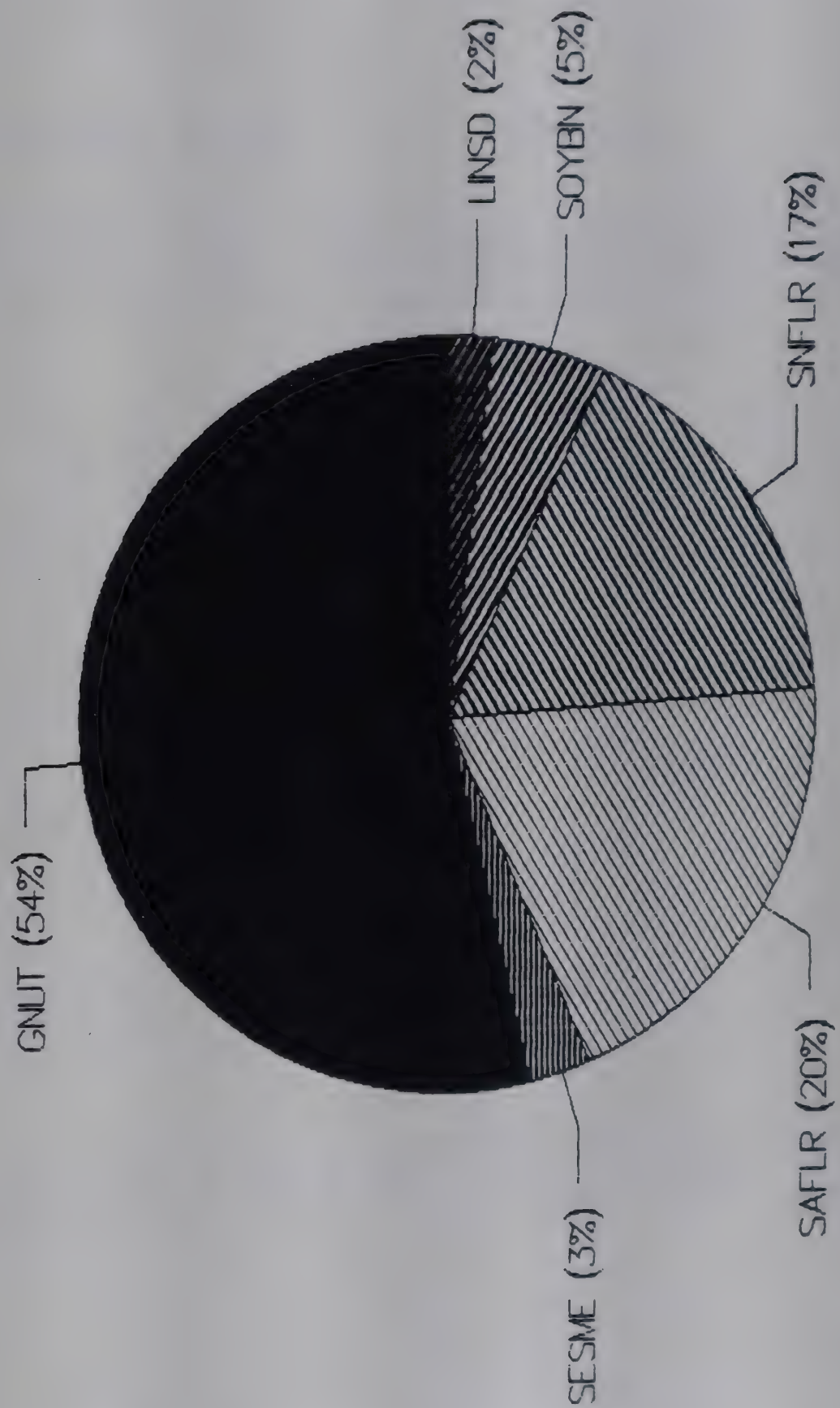


Production of Oilseeds

in Maharashtra



Production of Oilseeds in Maharashtra (1988-89)



FRUITS PRODUCTION IN MAHARASHTRA

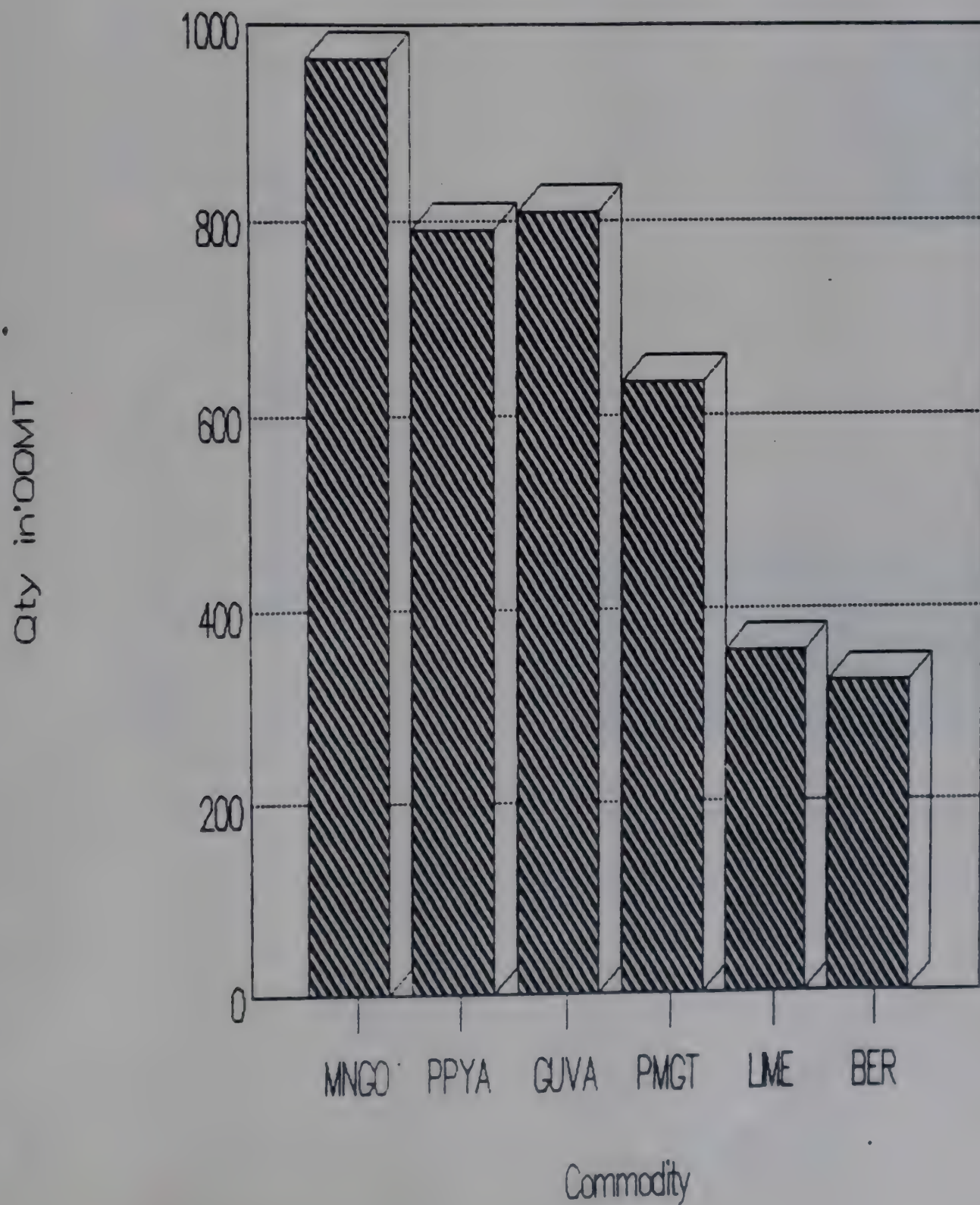
(PRODN IN 00 MT)

DISTRICTS	MANGO 87-88 88-89	PAPAYA 87-88 88-89	BANANA 87-88 88-89	GUAVA 87-88 88-89	SAPOTA 87-88 88-89	PONOGRAATE 87-88 88-89	GRAPES 87-88 88-89	ORANGE 87-88 88-89	LIME 87-88 88-89	BER 87-88 88-89
1 BHANDARA	10	3	44	113				17	6	
2 CHANDRAPUR	8	1	6	2				6	3	
3 GADCHIROLI										
4 NAGPUR	20	14	51	52				1756	8	
5 WARDHA			230 154					454		
6 AKOLA	37		29 255	17	1			241	87	
7 AMRAVATI	150		352 352	11				906 850	14	
8 BULDHANA	10		244 364	19	3			30	12	8
9 YATMAL	37	8	45 175	24				295	10	3
10 AURANGABAD			139							
11 BEED	75	3	165		2	11	1		1	
12 LATUR				11	5	110	72 84	35	15	
13 JALNA	3	9	83	1		6		98	5	
14 Nanded	25	8	500 1013	67	3	2		63	11	
15 PARBHANI	37		1087 450	38	8			100	37	
16 USMANABAD	68		14	157		1	19 20	2	13	
17 AHMADNAGAR	18	13	88	196	49	116	12	100 100	116	260
18 DHULE	1	64	350 614	4	1		12	3	1	
19 JALGAON	5	208	7930 5800	23		15		52	51	
20 NASIK	104 203			181 118	15 4	34 138	506 651	48	91 25	32 34
21 KOLHAPUR	7 10		30 42	8 42			6 7		1 15	
22 SANGLI	10		1	1	4	91	103		3	
23 SATARA	1		17	17	20	6	2 31			
24 SOLAPUR	105		32	84		264	765		39	279
25 PUNE		450	180				44			
26 THANE	113	26	424 351	31	114					
27 RAIGAD										
28 RAYNAGIRI	112									
29 SINDHURG										
30 GR BOMBAY										
MAHARASHTRA	204 965	16 791	11876 9735	408 809	66 163	161 633	765 1570	1247 3909	209 355	292 324

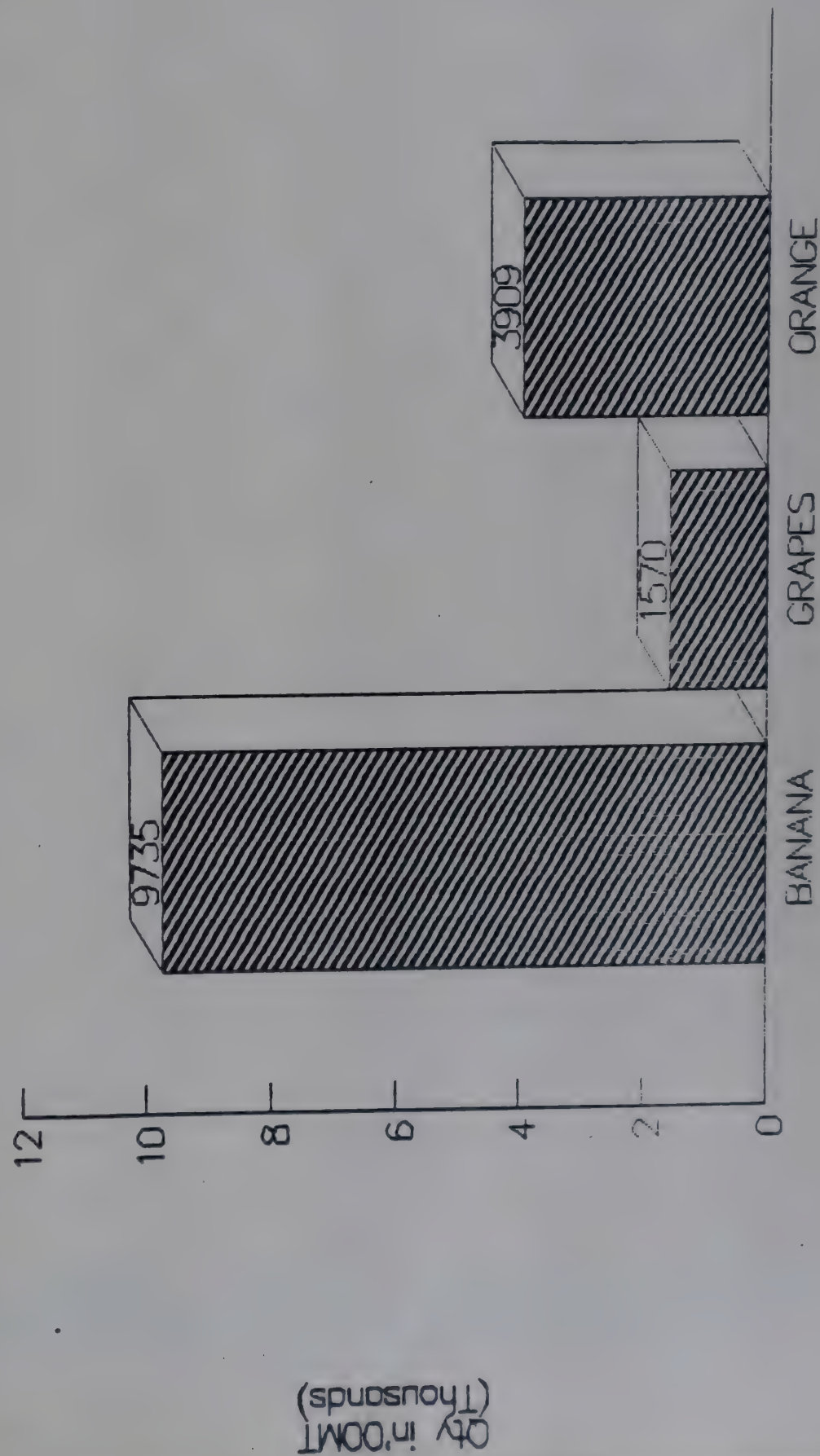
Note: Blank space indicates data not available.

Production of Fruits

in Maharashtra (1988-89)



Production of Fruits in Maharashtra (1988-89)



Commodity

VEGETABLE & SPICE/PLANTATION CROPS PRODUCTION IN MAHARASHTRA
(PROD. IN 00 MT)

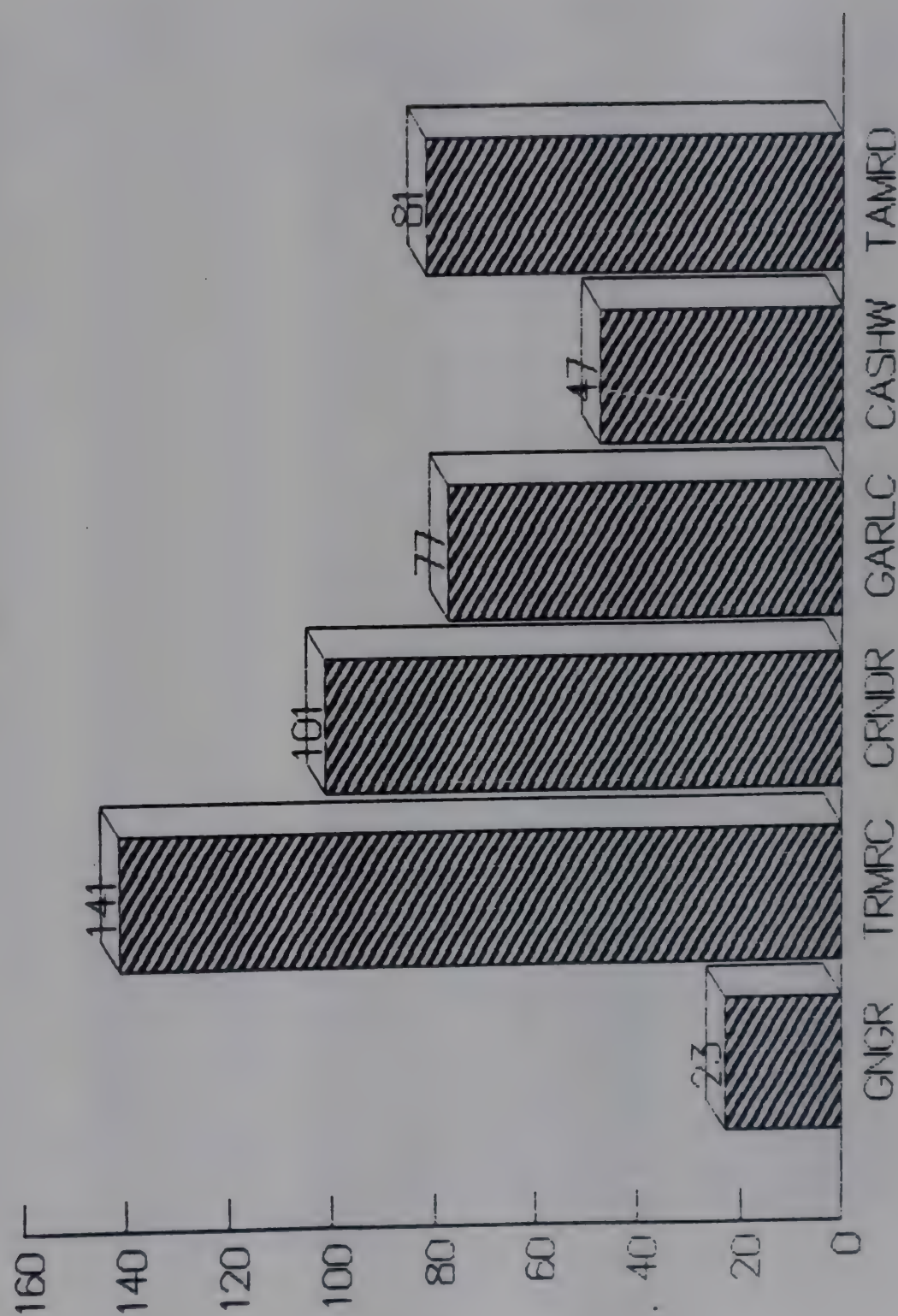
DISTRICTS	ONION 87-88 88-89	POTATO 87-88 88-89	TOMATO 87-88 88-89	CHILLI 87-88 88-89	GINGER 87-88 88-89	TURMERIC 87-88 88-89	CORIANDER 87-88 88-89	GARLIC 87-88 88-89	COCONUT * 87-88 88-89	CASHEWUT 87-88 88-89	TANARIND 87-88 88-89
1 BHANDARA	13	5	77								
2 CHANDRAPUR				28							
3 GADCHIROLI				6							
4 NAGPUR	91	22	716	100							
5 WARDHA		21		8		56					
6 AKOLA	229	1	28	15		75					
7 ARAVATI	77	1	20	66	1	79					
8 BULDHANA	261	1	75	18	20	9		6			
9 YETMAL	59	2	19	21	30	35		3			2
10 AURANGABAD		2		17							
11 BEED	25	60	500	12	45	48	4				
12 LAYUR		60		14		67					
13 JALNA			8	15	3						
14 HANDED	75	7	131	50	7				75		4
15 PARBHANI			25	17	1				2		1
16 USHANABAD	207	3	505	15	1	334	57	13			
17 AHMEDNAGAR	640	95	411	38							
18 DHOLE	526	11	13	60							
19 JALGAON	203		17	50							
20 MASIK	4050	11	476	60							
21 KOLHAPUR		3		20		315	12	15	2	7	8
22 SANGLI	117	3	63	45		793			260	3	
23 SATARA	511	79	15	18	3	15	29	35	26		
24 SOLAPUR	102		53	29	140	330			11	1	
25 PUNE											74
26 THANE	15	14	60	3	7				13		
27 RAIGAD					5				113	1	
28 RAYNAGIRI				4		16			136		
29 SINDHODURG				5		11			641	78	41
30 GR BOMBAY									607	59	
MAHARASHTRA	4715 7025	348 539	1415 2307	634 864	62 23	2183 141	16 101	15 77	1774 434	147 47	6 81

Note: Blank space indicates data not available.
* COCONUTS IN LAKE NOS

Production of Vegetables in Maharashtra (1988-89)



Prodn of Spices & plantation Crops in Maharashtra (1988-89)



Commodity

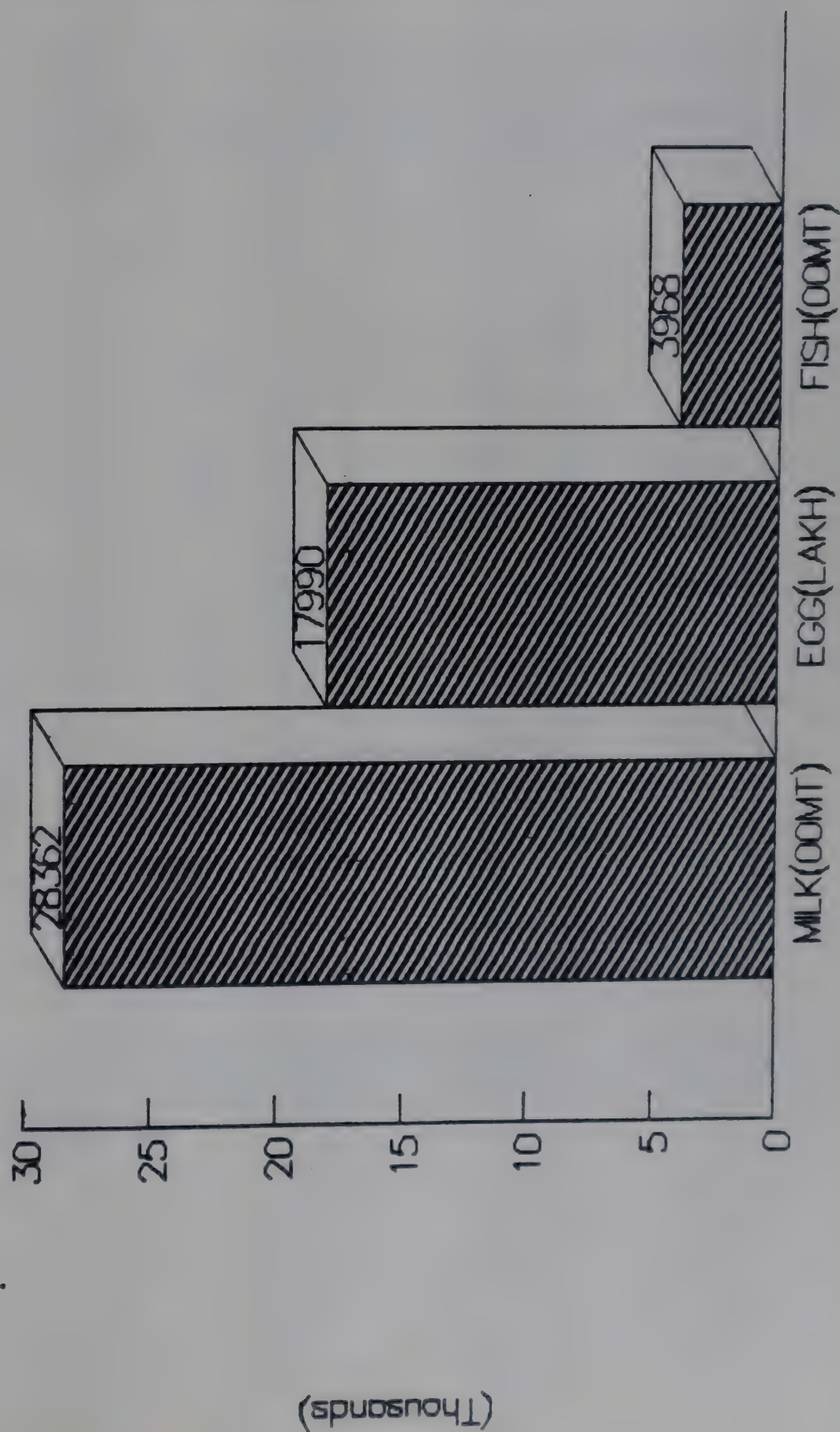
ANIMAL HUSBANDRY IN MAHARASHTRA

DISTRICTS	MILK PRDN	EGG PRDN	AS PER 1982 CENSUS					TOTAL FISH PRDN		
	'00 MT 1988-89	IN LAKH 1988-89	('000 NO)					('00 MT)		
			COWS	BUFFALO	SHEEP	GOAT	POULTRY	1987-88	1988-89	1989-90
1 BHANDARA	638	216	206	56	4	233	570	70	73	73
2 CHANDRAPUR	275	231	199	42	41	231	810	36	38	39
3 GADCHIROLI	151	152	156	12	11	155	539	17	16	18
4 NAGPUR	515	207	235	39	22	279	377	37	36	38
5 WARDHA	290	96	139	26	8	146	165	7	8	9
6 AKOLA	706	177	201	70	60	273	255	15	17	18
7 AMRAVATI	614	176	178	55	21	265	288	11	12	12
8 BULDHANA	900	137	185	61	57	292	238		14	18
9 YETMAL	642	275	281	64	9	340	567		205	387
10 AURANGABAD	592	130	143	37	67	294	223			23
11 BEED	1114	238	176	69	168	332	397		17	20
12 LATUR	765	75	114	59	39	142	149	6	7	8
13 JALNA	447	83	108	28	42	203	135			9
14 NANDIED	910	147	246	96	50	239	283	14	15	15
15 PARBHANI	835	118	214	68	41	258	213	12	11	13
16 USMANABAD	772	108	106	64	42	180	177	7	5	5
17 AHMADNAGAR	1829	958	334	72	341	640	1188			11
18 DHULE	928	412	202	81	109	311	547	4		
19 JALGAON	1536	251	197	139	36	328	341	18		
20 NASIK	1276	754	289	75	211	412	705	7	8	7
21 KOLHAPUR	2166	956	74	248	122	158	766	6		
22 SANGLI	1846	1998	112	169	237	258	1157	8	14	19
23 SATARA	1639	1356	148	170	296	285	1164	6	7	
24 SOLAPUR	1470	1006	175	103	268	564	1024	7	7	8
25 PUNE	2043	4451	261	122	394	466	2874			
26 THANE	883	1125	156	81	3	173	1330	627	1020	
27 RAIGAD	828	1205	137	83	1	102	1230	454	406	
28 RATNAGIRI	400	478	152	35		78	1103	502	636	
29 SINDHODURG	217	370	57	32		42	744	286	200	
30 GR BOMBAY	1135	104	3	53	14	24	230	1067	1196	
TOTAL MAHARASHTRA	28362	17990	5184	2309	2714	7703	19769	3224	3968	750

NOTE: Blank space in the column indicates data not available.

Milk, Eggs & Fish Prod

in Maharashtra (1988-89)



Commodity

ARRIVALS AT REGULATED MARKETS IN MAHARASHTRA 1967-68

(IN 00 MT)

DISTRICTS	PADDY	RICE	JOWAR	WHEAT	MAIZE	BAJRA	TOOR	MOONG	UDID	GRAM	GHUT	SAFFLE	SUNFLR	SOYA	SESAN	LINSER
1 BHANDARA	759	248	22	103			1	4	2	8					12	3
2 CHANDRAPUR	265	1	19	2			4	8	6	1					3	6
3 GADCHIROLI	814	26	10	23	3		1	5	2	1					2	7
4 NAGPUR	2	92	49	47			81	1	2	18	40			153	15	2
5 WARDHA			87	4		1	83	1	1	7	2			3	11	1
6 AKOLA	24	1	786	90	1	31	17	365	169	45	34	61	80		22	2
7 AMRAVATI		2	200	139		6	182	122	15	62	163			8	19	3
8 BULDHANA	1		940	48	1	86	91	158	80	21	44		97		1	1
9 YKOTMAL	1		76	36		25	204	17	10	10	43				12	3
10 AURANGABAD			206	104	16	80	97	30	1	20	10	42	16		7	2
11 BEED			258	36	1	258	110	80	8	10	44	44			18	1
12 LATUR			248	30	18	155	436	95	236	67	74		59		1	2
13 JALNA			403	79	15	284	181	187	5	11	3		47		4	1
14 NANDUR			204	12	1	2	105	42	54	5	23	1			1	1
15 PARBHANI			224	29		16	255	167	18	6	30	47			1	1
16 USMANABAD			70	28	5	5	66	11	31	7	9	3			1	1
17 AHMADNAGAR		8	641	293		642	43	39	4	79	48	11			1	1
18 DHULE		43	856	295		254	83	126	57	50	361				58	
19 JALGAON		6	2249	174		456	42	80	91	88	88				75	
20 NASIK	18	49	15	65		44	3		1	4						
21 KOLHAPUR	43	251	327	127	15	5		35	17	35	100			25		
22 SANGLI		198	299	89	462	32	18	11	6	30	128	5				
23 SATARA		3	80	33	1	15	3	2	3	9	12					
24 SOLAPUR	182		616	109		91	44	7	12	26	150					
25 PUNE		934	550	700		103	1	12	1	8						
26 THANE	70	138														
27 RAIGAD	240	108														
28 RATNAGIRI																
29 SINDHODURG																
30 GR BOMBAY																
MAHARASHTRA	2419	2108	9415	2695	539	2591	2151	1605	812	626	1406	214	299	189	263	36

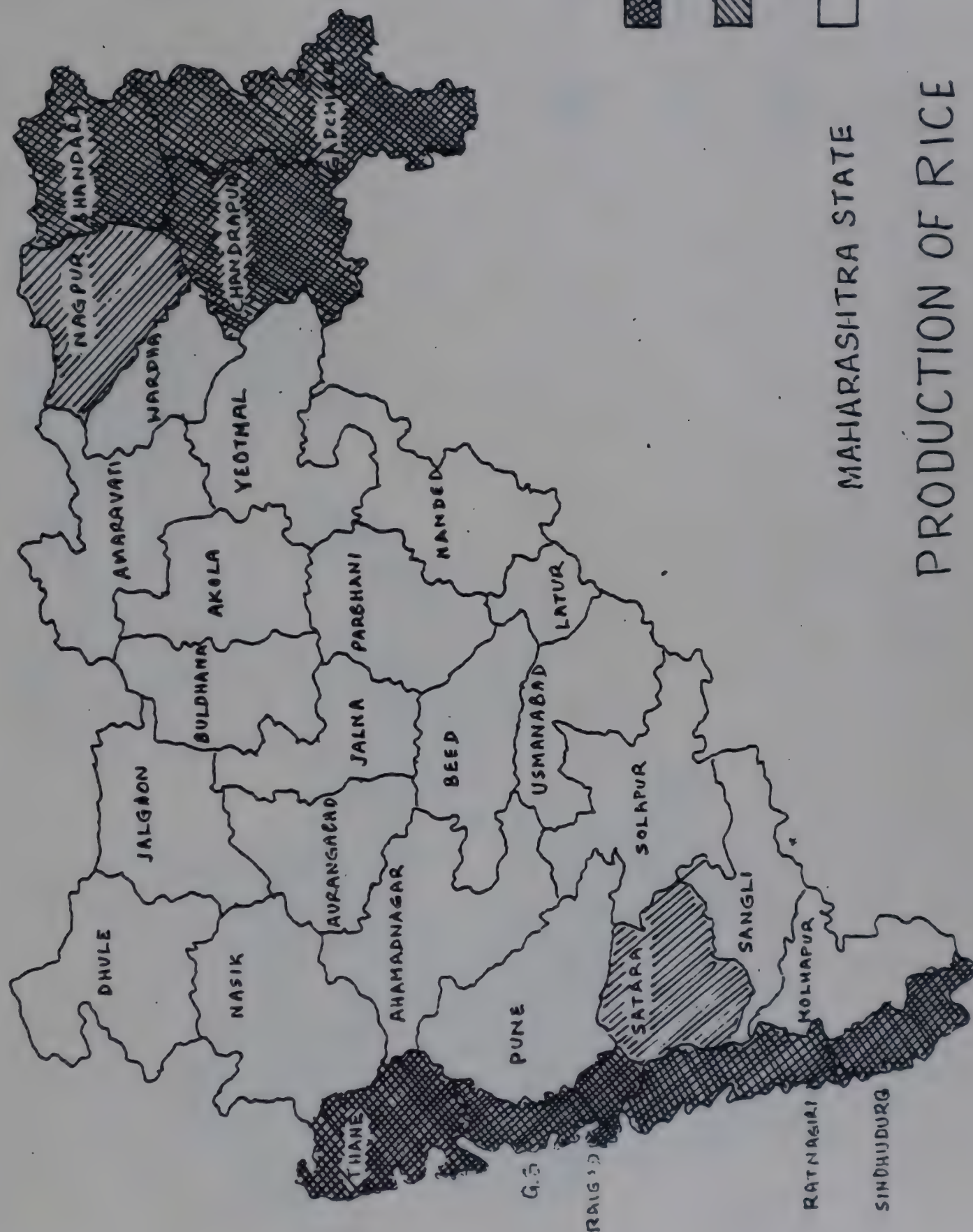
Note: Blank space indicates data not available.

ARRIVALS AT REGULATED MARKETS IN MAHARASHTRA 1987-88

(IN 00 MT)

DISTRICTS	CHILLI	TURMER	CORIAN	GINGER	TAMBIN	PEAS	ONION	POTATO	TOMATO	BANANA	LIME	BER	ORANGE	MANGO	PGNATE	GRAPES
1 BHANDARA	20				4											
2 CHANDRAPUR																
3 GADCHIROLI																
4 NAGPUR	44			21			417	53		49			3862	177		14
5 WARDHA				1												
6 AKOLA																
7 AMRAVATI	13												758			
8 BULDHANA	27															
9 YKOTMAL																
10 AURANGABAD																
11 BEED																
12 LATUR																
13 JALNA	4					8		18		49						
14 Nanded																
15 PARBHANI																
16 USMANABAD																
17 AHMADNAGAR					19		165	19	88	640	957		1	270	21	
18 DHULE	89						450			90			10			
19 JALGAON	54		11													
20 NASHIK							5928									
21 KOLHAPUR	73					68	197	109								
22 SANGLI	11	368	2		5	23										
23 SATARA	6	24	8				552	10								
24 SOLAPUR							424	35	50	14	20	3	2			
25 PUNE																
26 THANE																
27 RAIGAD																
28 RATNAGIRI																
29 SINDHURG																
30 GR BOMBAY																
MAHARASHTRA	341	392	21	22	28	99	8133	244	138	842	977	3	4633	447	21	14

Note: Blank space indicates data not available.



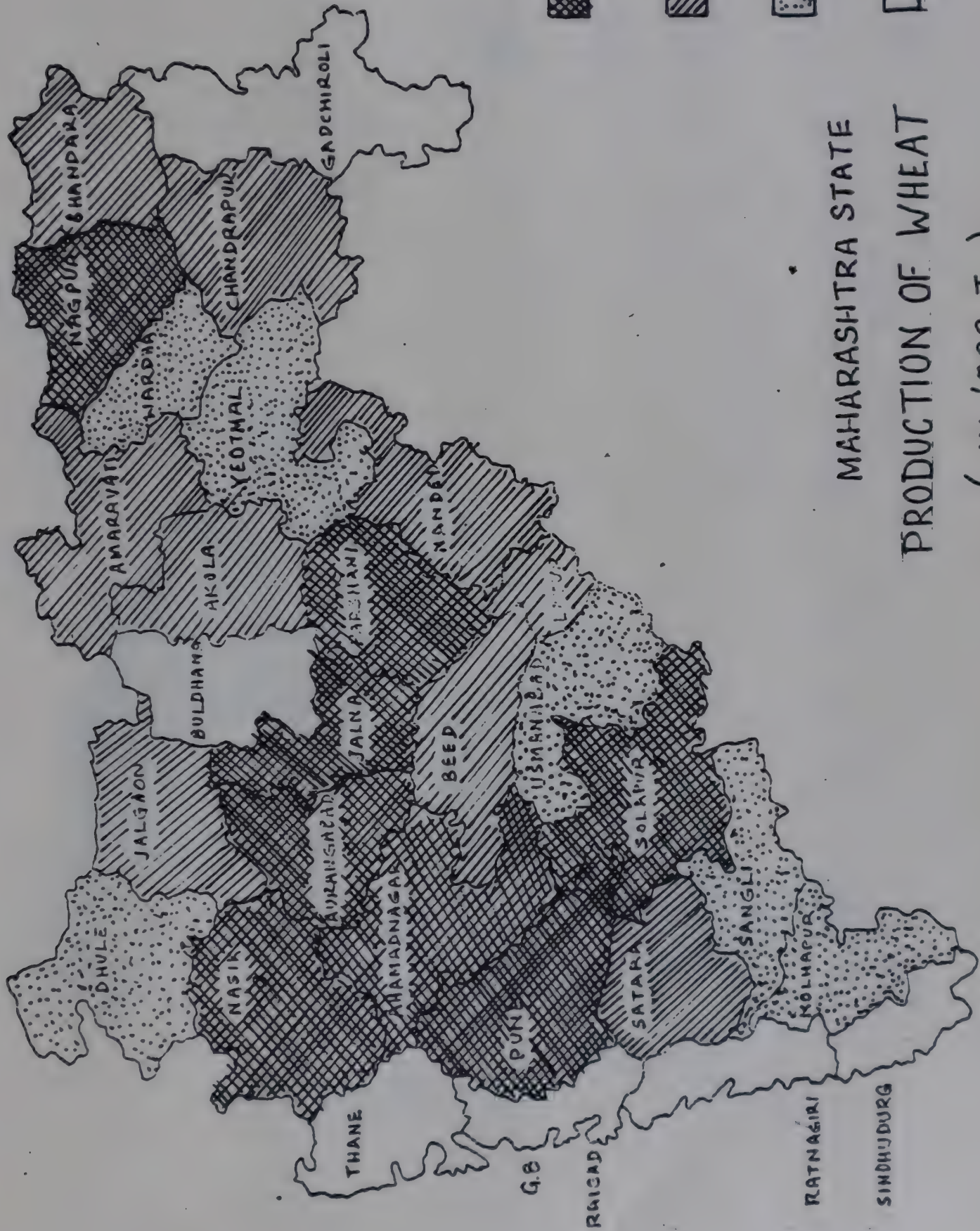
MAHARASHTRA STATE

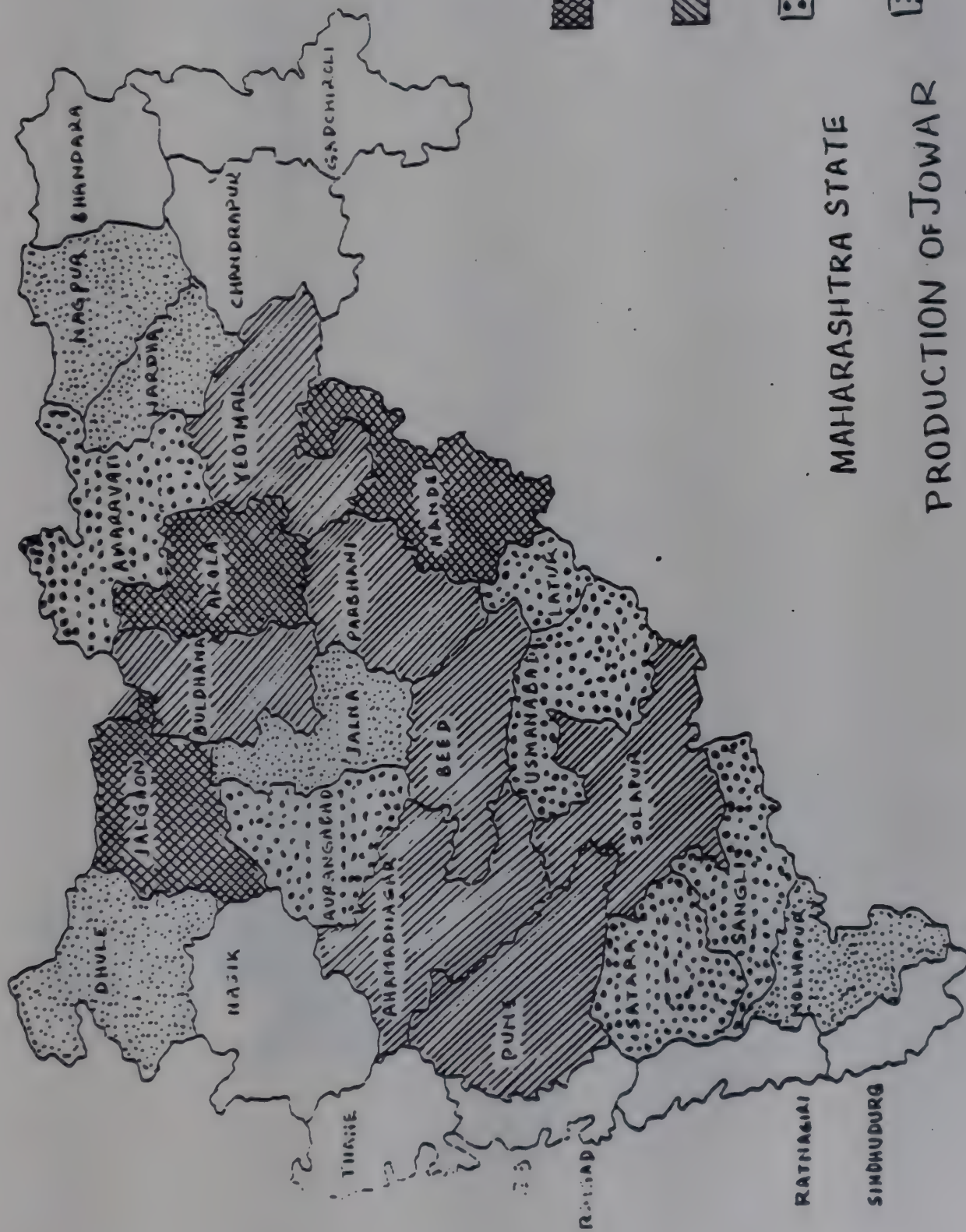
PRODUCTION OF RICE (IN '000 TONNES)

Above 100

50 - 100

Less than 50

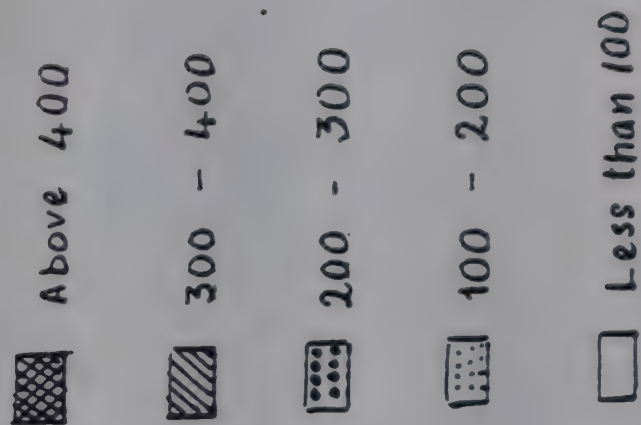


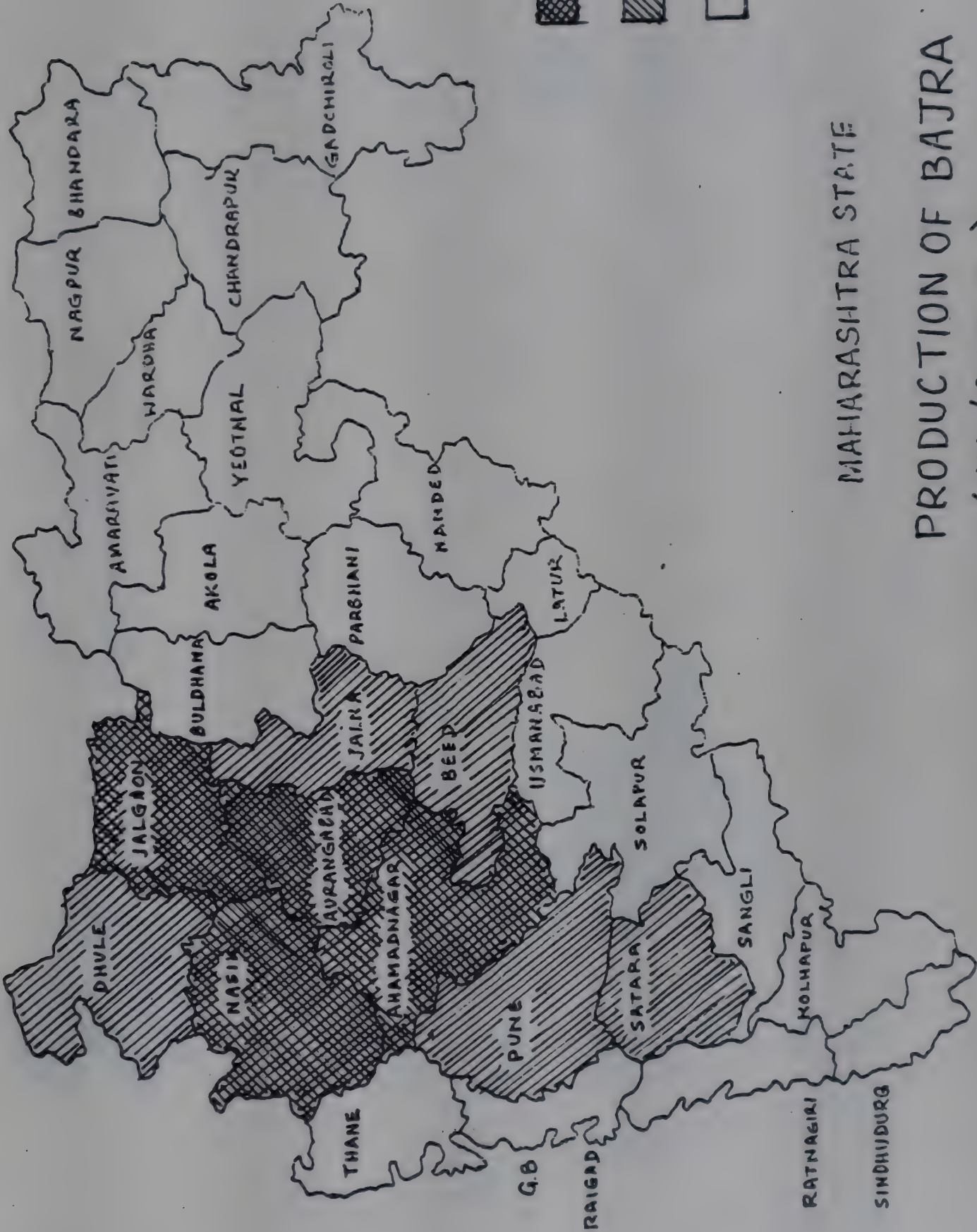


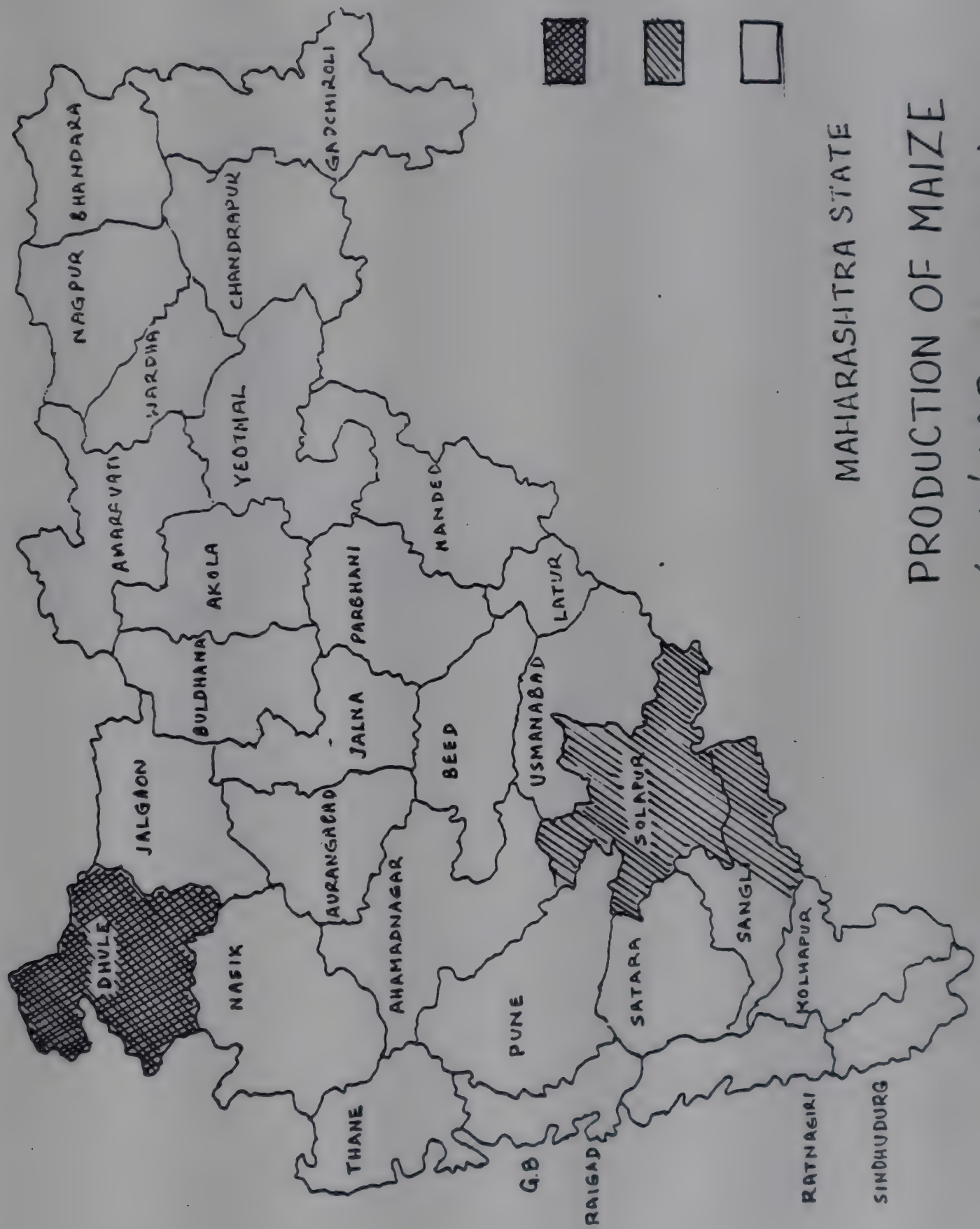
MAHARASHTRA STATE

PRODUCTION OF JOWAR

(IN '000 T)





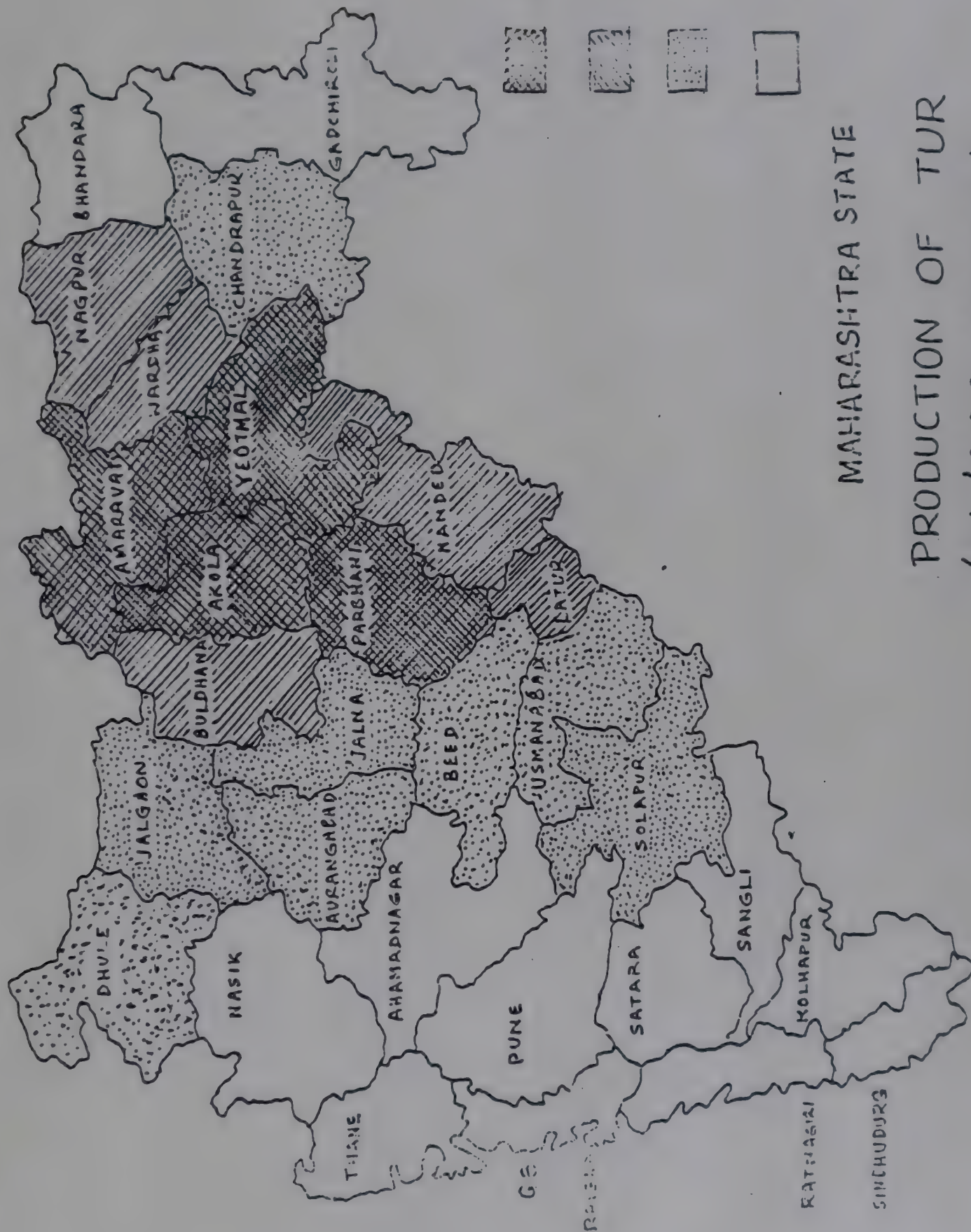


MAHARASHTRA STATE
 PRODUCTION OF MAIZE
 (IN '000 TONNES)

Above 50

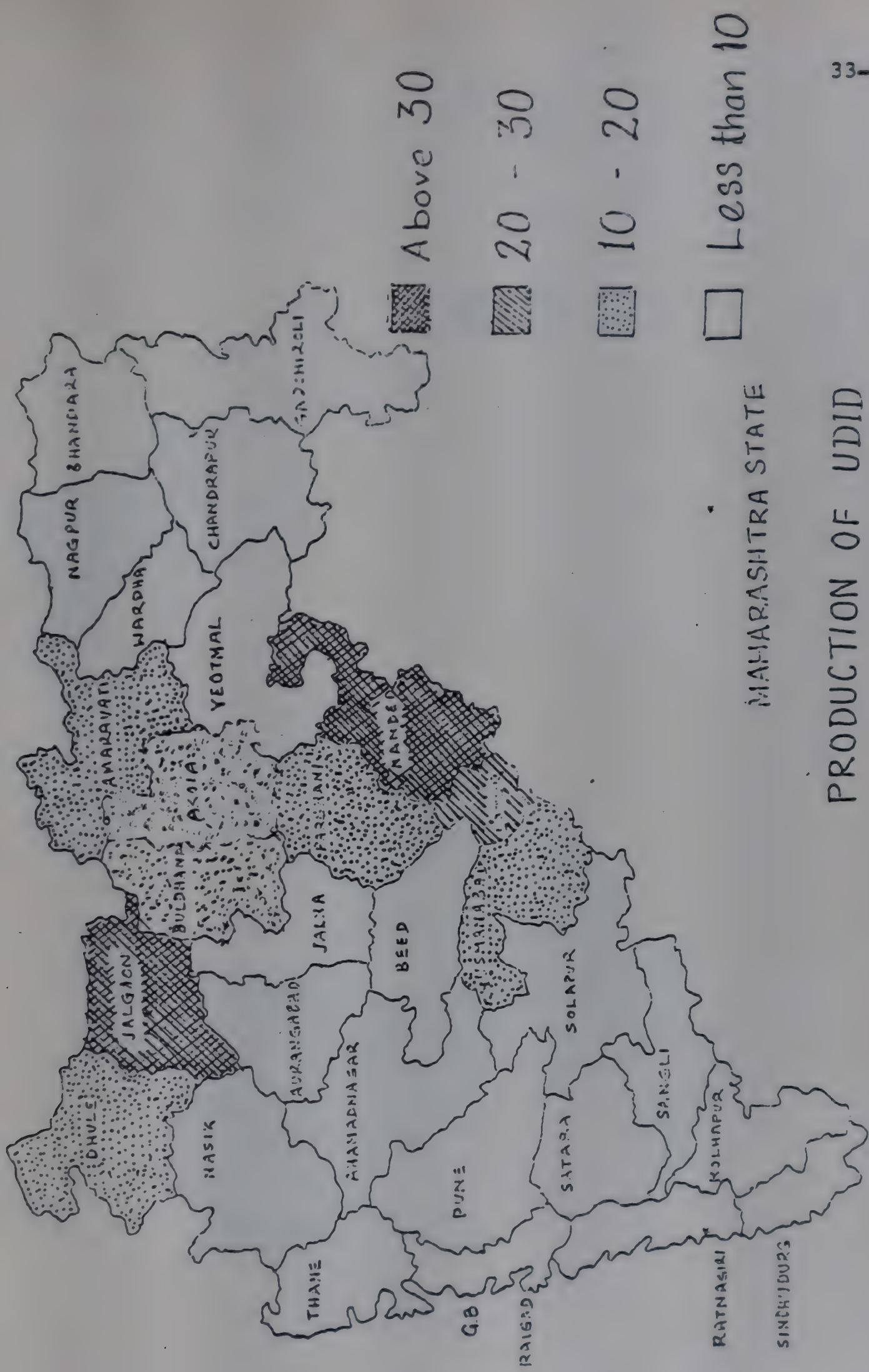
10 - 20

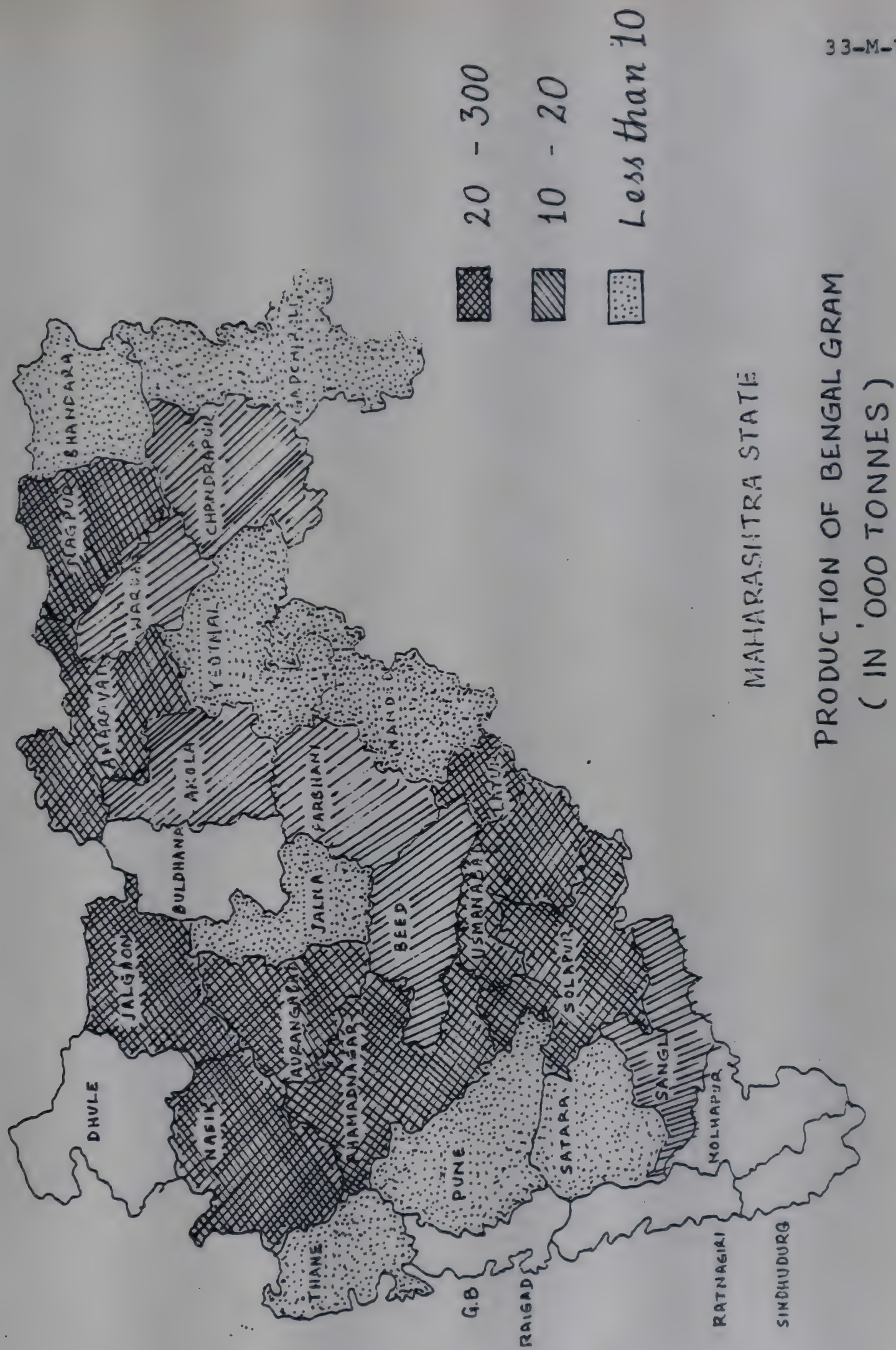
Less than 10

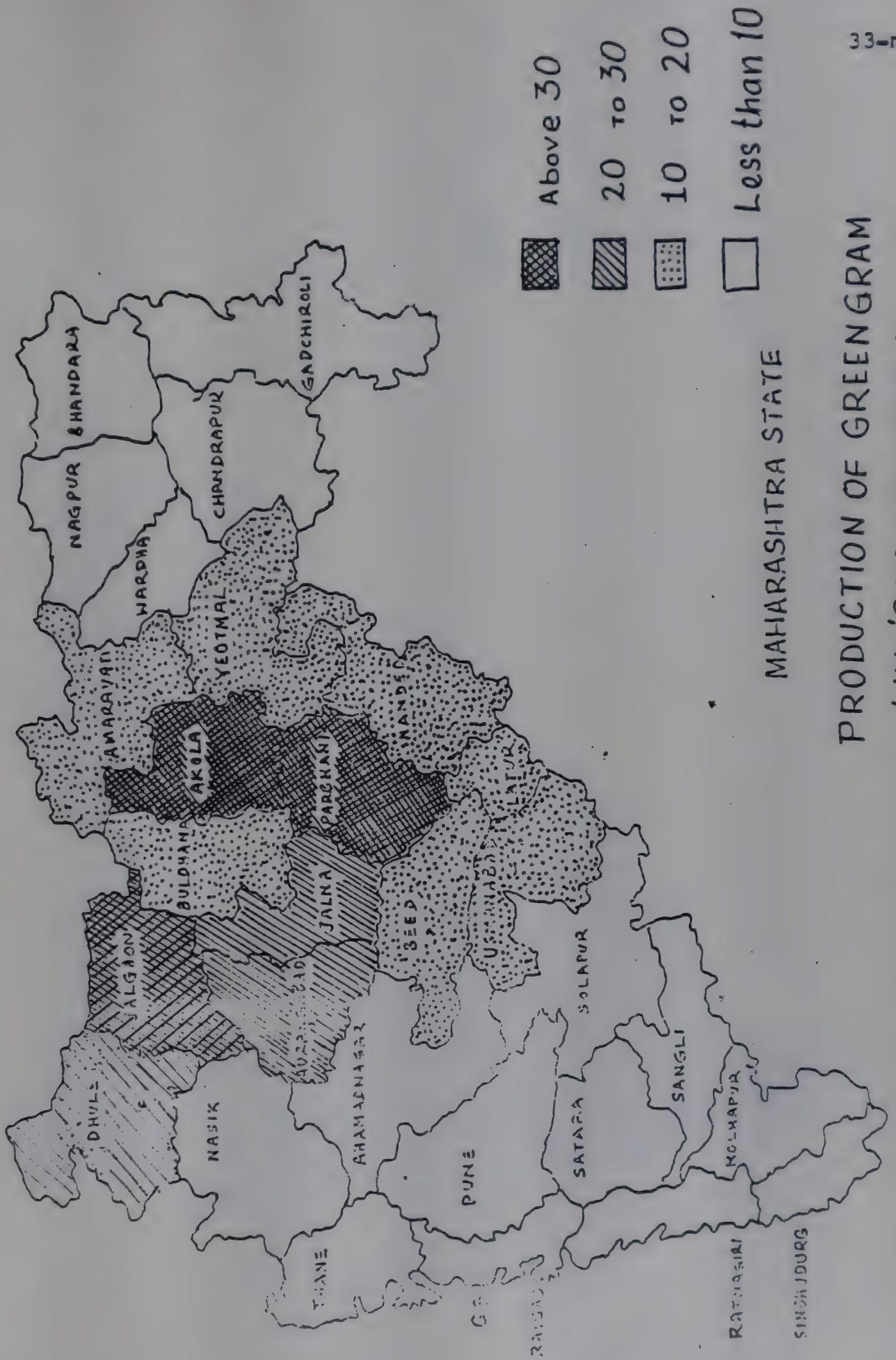


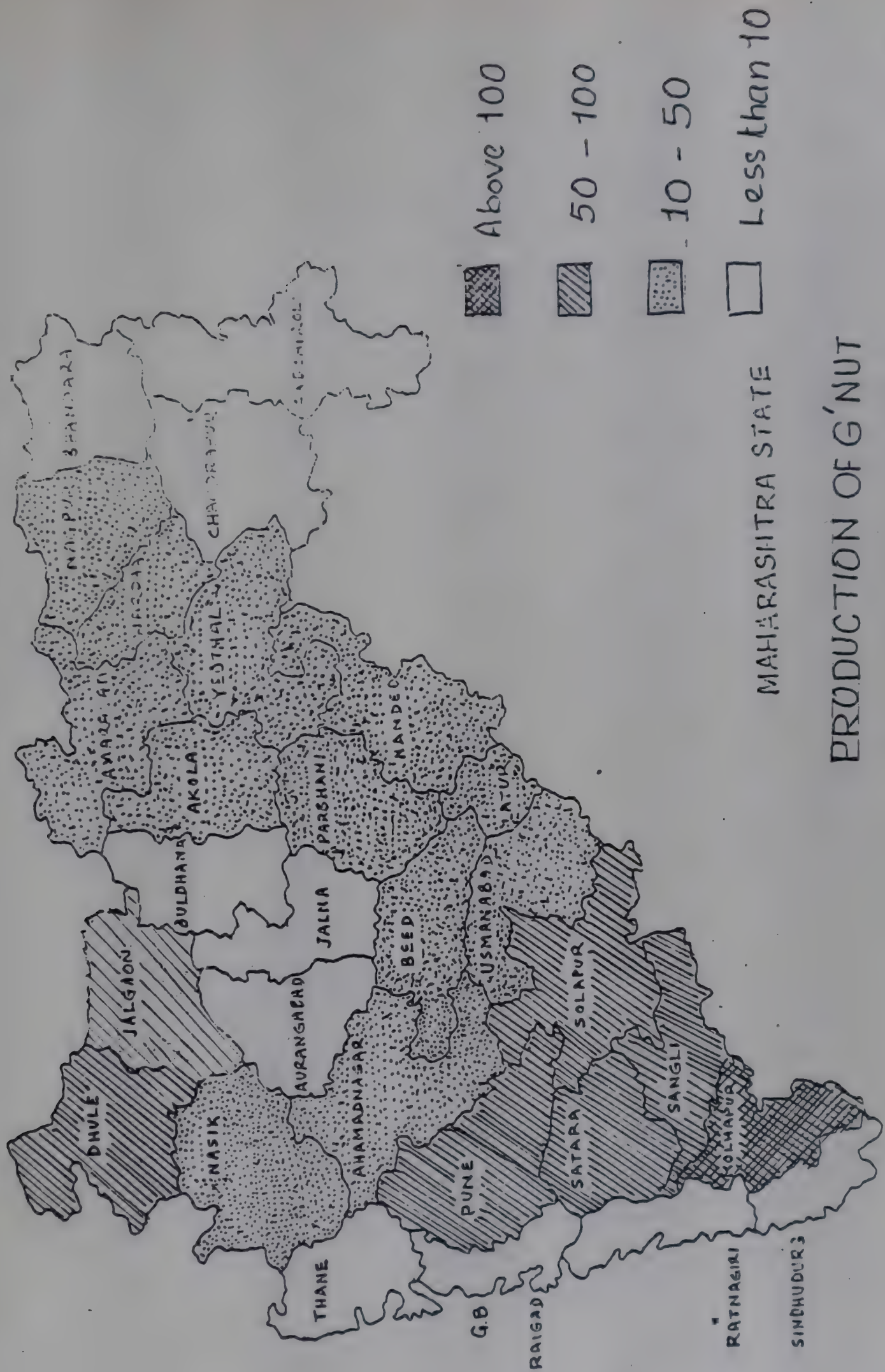
MAHARASHTRA STATE
PRODUCTION OF TUR
(IN '000 TONNES)

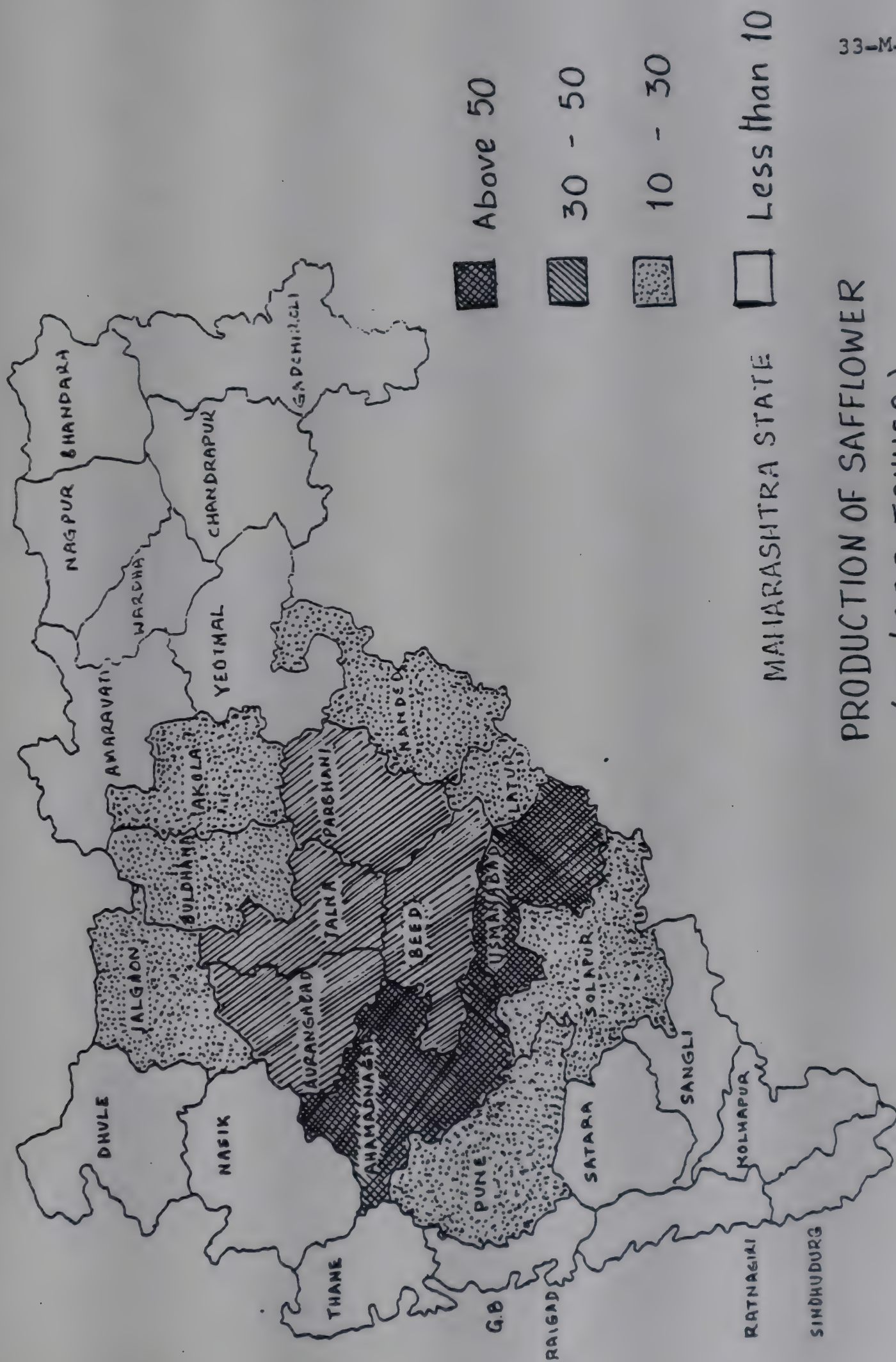
Above 50
30 to 50
10 to 30
Less than 10

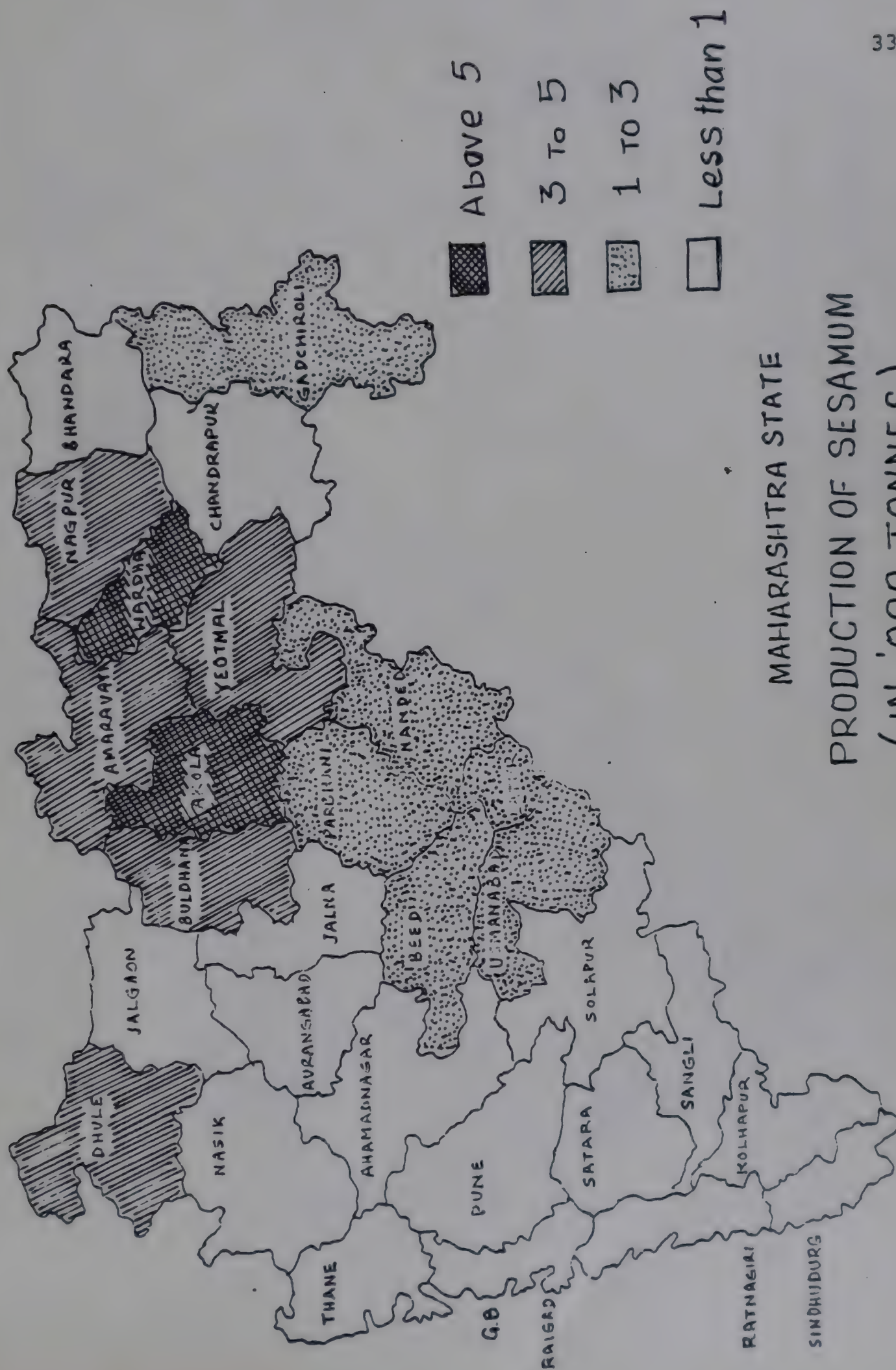


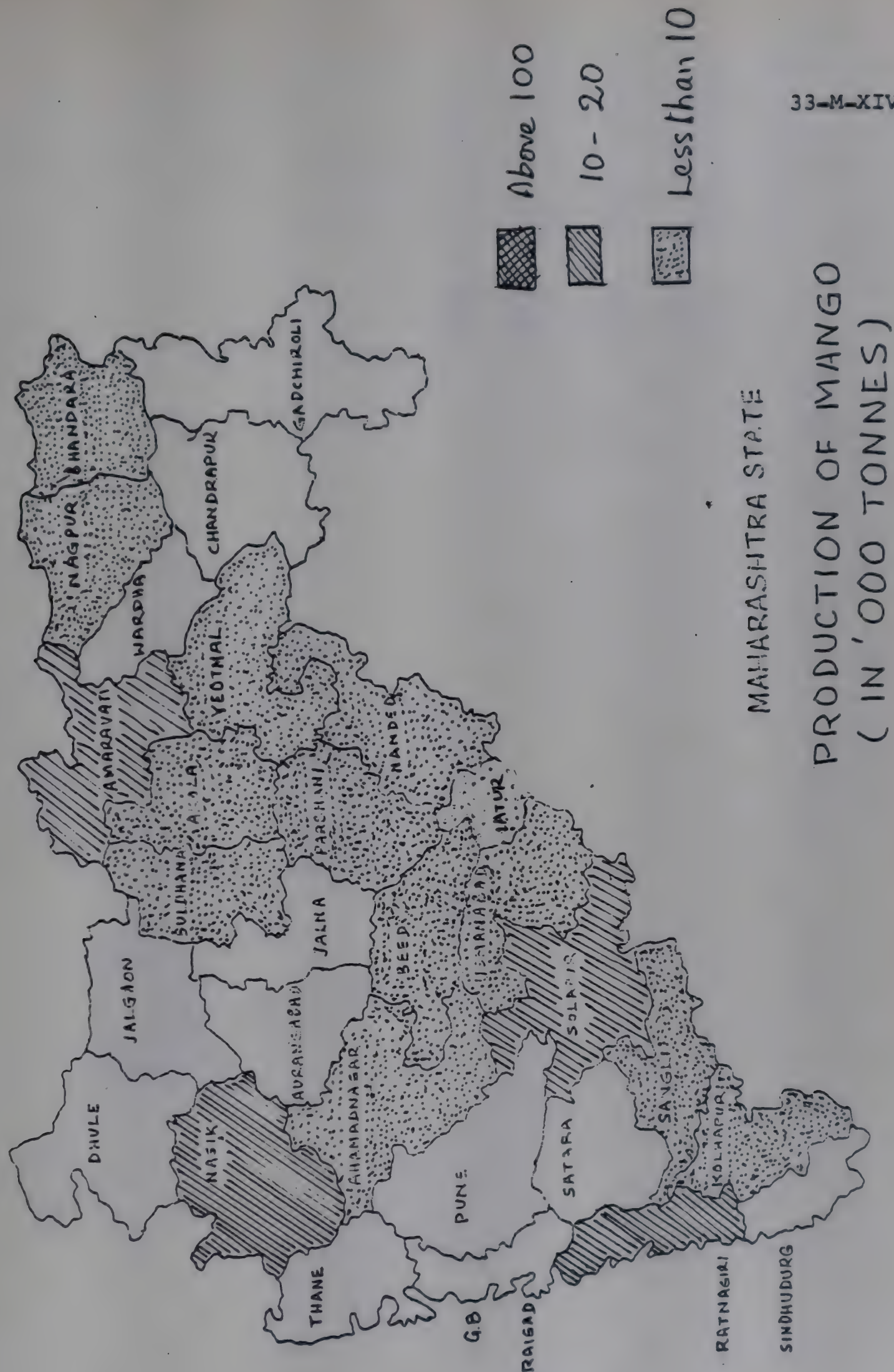


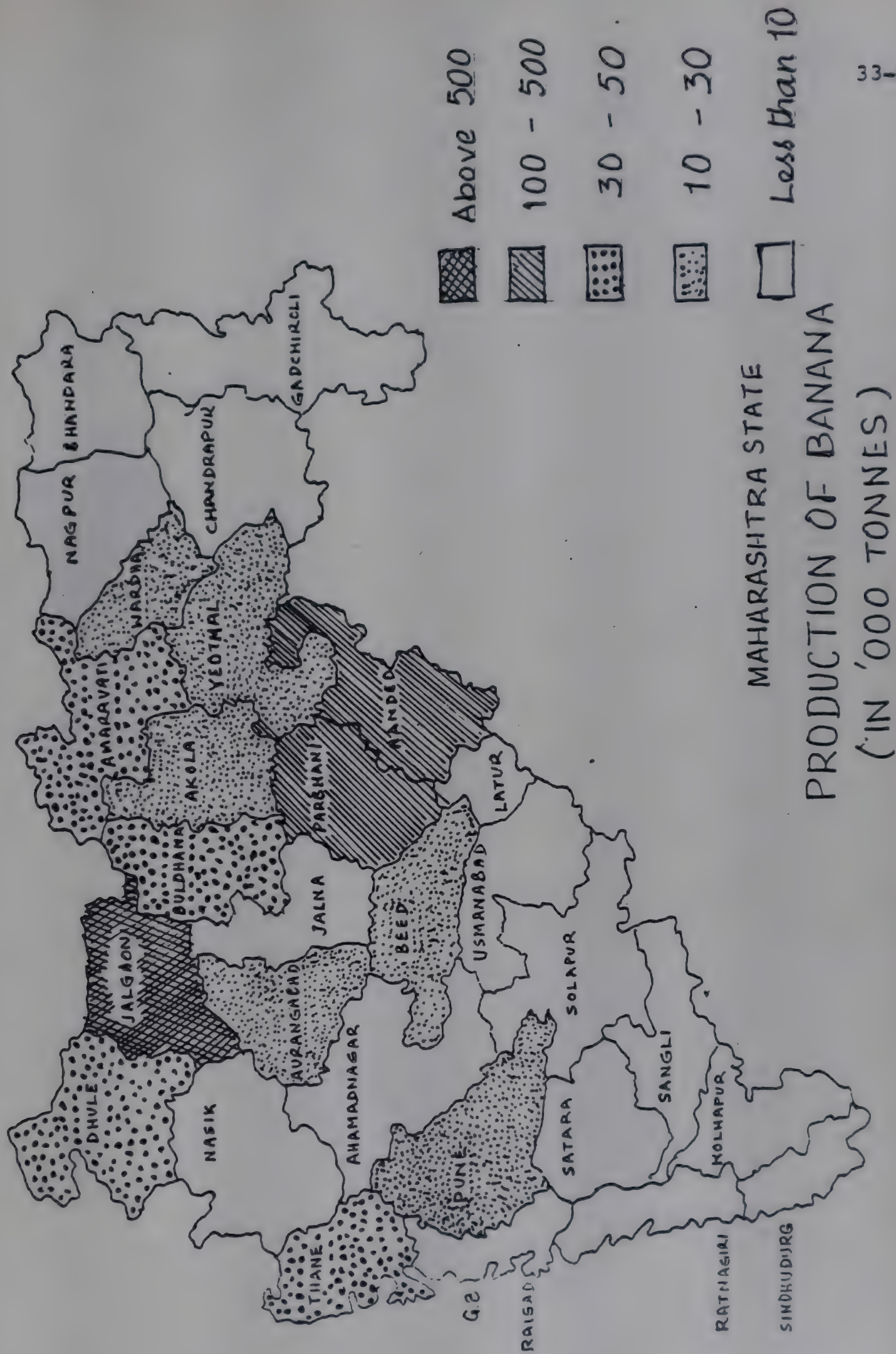


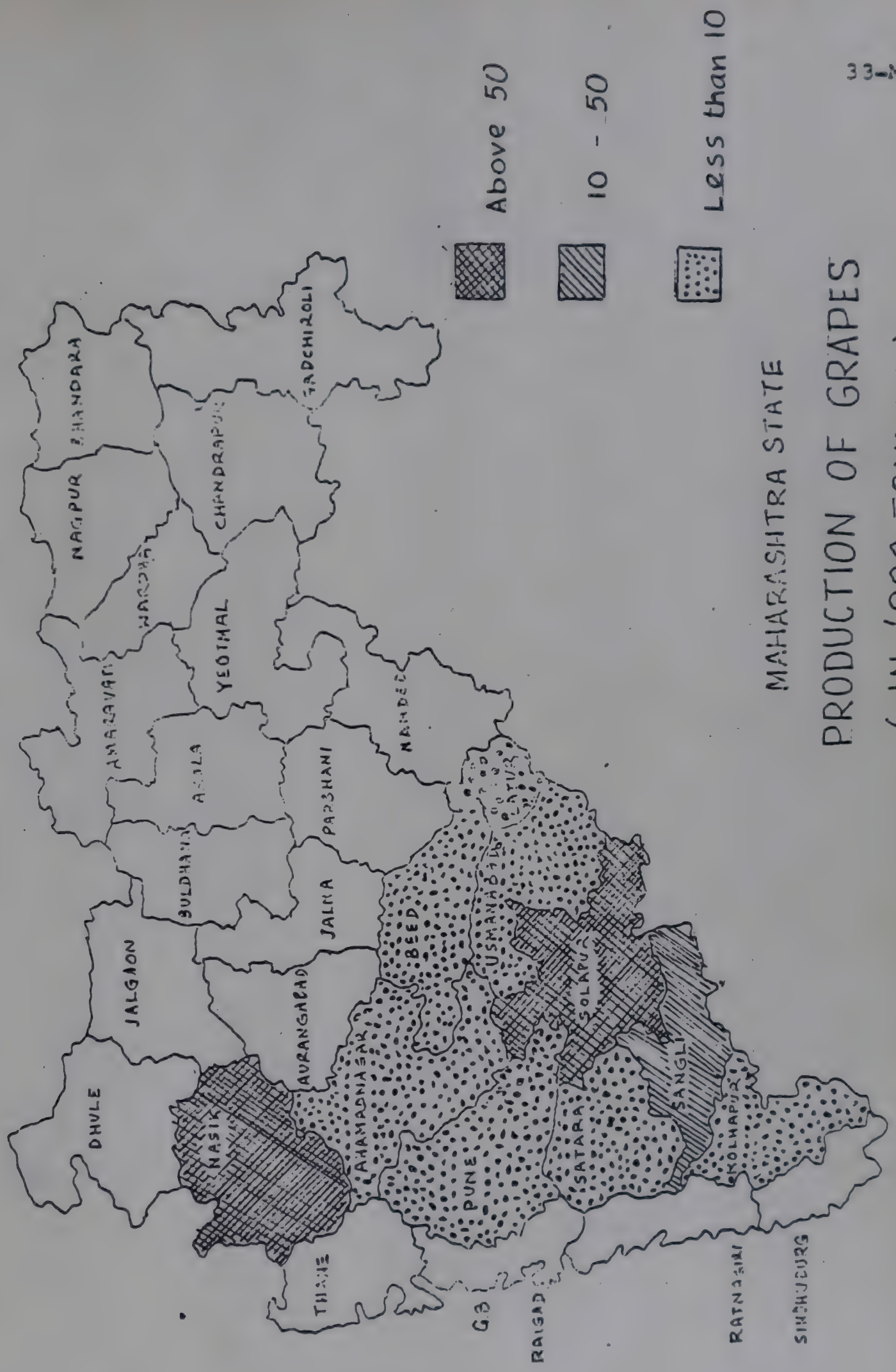




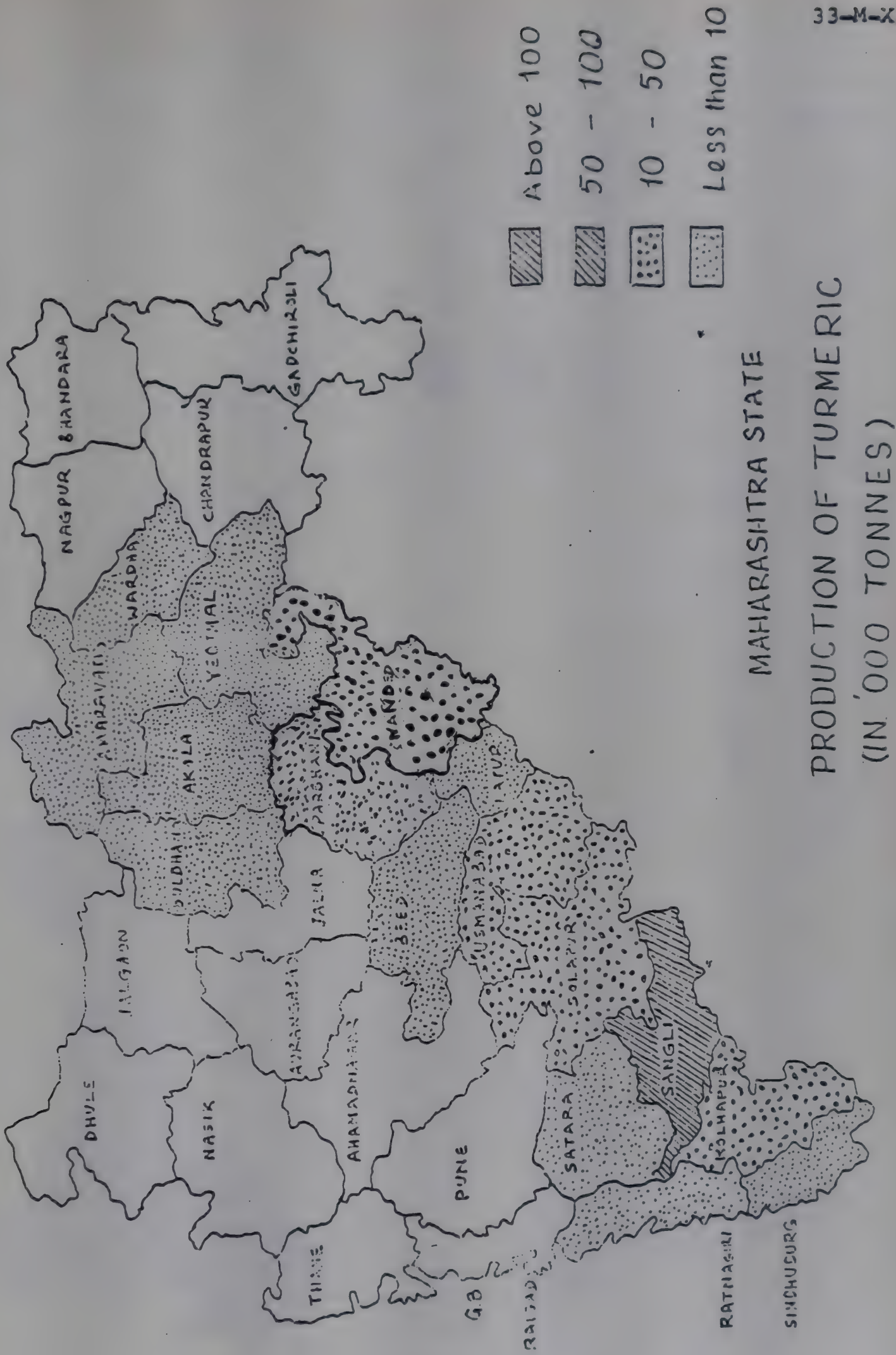


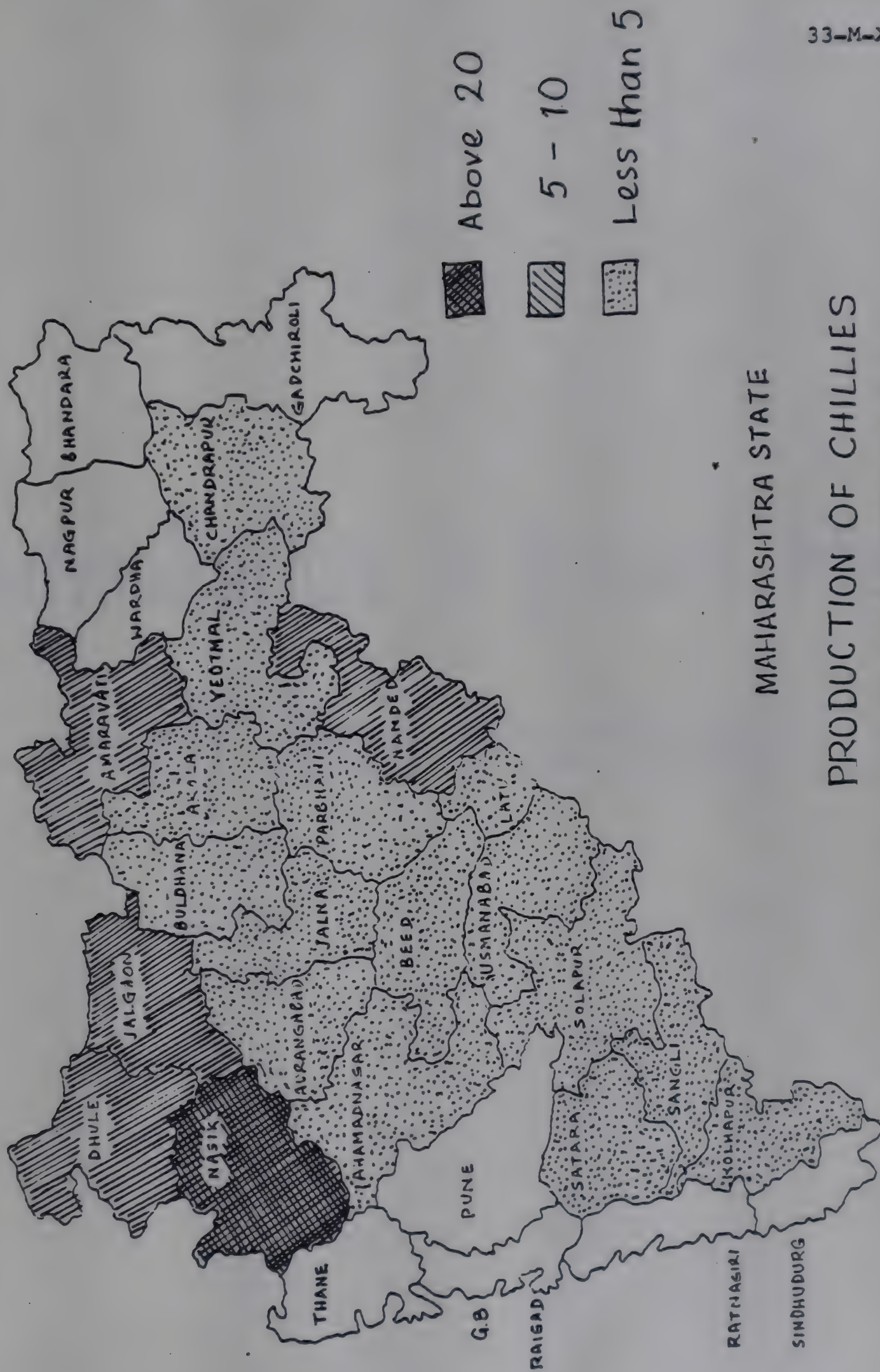






MAHARASHTRA STATE
PRODUCTION OF GRAPES
(IN '000 TONNES)





MAHARASHTRA STATE
PRODUCTION OF CHILLIES
(IN '000 TONNES)

Above 20

5-10

Less than 5

Infrastructure & Present Status
Of Agro Processing

IV. INFRASTRUCTURE AND PRESENT STATUS OF AGRO PROCESSING

Steering the industries outside the congested Bombay-Thane-Pune belt to the under-developed and developing areas of the State is the major task for the policy-makers in the Government. It was thus imperative to stimulate industrial activity in the backward areas. The Government has thus framed its industrial policy in such a way that the objectives of balance dispersal of industry, creation of employment at the local level and raising the standard of living of the people could be attained.

To implement this policy, the State Govt. created various industrial Corporations such Maharashtra Industrial Development Corporation (MIDC), the State Industrial and Investment Corporation of Maharashtra Limited (SICOM), etc. The former concentrated its efforts on providing basic industrial infrastructure while the latter, in addition to the provision of term finance to medium and large scale industries offered to the entrepreneurs a package of services ranging from the stage of project conception to its final implementation. Additionally, attractive monetary and fiscal incentives were offered through SICOM and Regional Development Corporations to the entrepreneurs to help change their locational decisions in favour of these areas.

Today, the little known cities of yesteryears have become burgeoning industrial townships in the hinterland of Maharashtra. They enjoy the infrastructural facilities such as power, water, roads, telephones, telex, trained labour, etc. They even boast of advanced urban infrastructure such as good English medium schools, colleges and Universities as well as well-equipped hospitals, theatres, exclusive clubs, hotels and restaurants.

In the following pages, we present the infrastructural facilities of 30 identified industrial locations, which will give a fair idea of what the State has to offer in terms of well-developed.

AHMADNAGAR

LOCATION	:	258 kms by road and 414 kms by rail via Manmad, from Bombay
LAND	:	959.11 hectares in the MIDC Indl. Area, 8 kms from Ahmadnagar city
	:	Rate - Rs.25 per Square Metre
WATER	:	5.5 Million Gallons per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	75 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex exchanges in the area. STD with Bombay available
MANPOWER	:	Industrial Training Institute and four Engineering Colleges in the District
INTERNAL TRANSPORT	:	Regular ST Bus services between the City and the Area
FACILITIES IN THE AREA	:	Canteens, police station, banks and the MIDC Common Facility Centre housing a post office and six furnishe suites
SOCIAL AMENITIES	:	Primary and secondary schools including English medium, Arts, Commerce, Science, Law and Ayurveda Colleges, a Government Civil Hospital, Private Clinics and Nursing Homes, Clubs, Shopping Centres, Housing on rental basis and under MHADA's scheme

AKOLA

LOCATION	:	607 kms by road and 584 kms by rail from Bombay
LAND	:	293.35 hectares in the MIDC Indl. Area, 7 kms from Ahmadnagar city
	:	Rate - Rs.15 per Square Metre
WATER	:	5300 Cubic Metres per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	20 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Automatic Telephone exchange and a telex exchanges
MANPOWER	:	Industrial Training Institute and College of Engineering & Technology
INTERNAL TRANSPORT	:	Regular ST Bus services between the City and the Area
FACILITIES IN THE AREA	:	Canteens, police station, banks, etc.
SOCIAL AMENITIES	:	Primary and secondary schools including English medium, Arts, Commerce, Science, Law and Ayurveda and Homeopathy Colleges; Agriculture University; Clubs, Swimming pool; a Government and two Municipal Hospitals; co-operative housing societies, and good lodges and hotels

AMRAVATI

LOCATION	:	704 kms by road from Bombay and connected by an hourly railway shuttle service from Badnera on Bombay-Howrah line, passing through the Industrial Area. Nearest airport Sonegaon, Nagpur is 155 kms
LAND	:	180.13 hectares in the MIDC Indl. Area
	:	Rate - Rs.15 per Square Metre
WATER	:	2250 Cubic Metres per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	10 MVA (2 transformers each of 5 MVA capacity)
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and Telex facilities
MANPOWER	:	Industrial Training Institute, Government Polytechnic and a Ladies' Polytechnic
INTERNAL TRANSPORT	:	Regular ST Bus services between the City and the Area
FACILITIES IN THE AREA	:	A hotel and a canteen in the MIDC Common Facility Centre
SOCIAL AMENITIES	:	70 Primary and 65 High Schools including English medium and 3 convent schools; technical school, 18 colleges including arts, commerce, science, law, engineering, medical ayurveda and homeopathy; a General Hospital and 200 dispensaries; co-operative housing societies; clubs; parks; swimming pools; theatres; stadium; lodges and hotels

AURANGABAD

LOCATION	:	Aurangabad is 363 kms by road and 374 kms by rail and less than an hour away by air from Bombay. Tourist centre on account of Ajanta and Ellora caves, nearby
LAND	:	1563.24 hectares in the MIDC Indl. Area Waluj, 10 kms from Aurangabad
	:	Rate - Rs.40 per Square Metre
	:	719.68 hectares in MIDC Industrial Area Chikalthana, on the outskirts of Aurangabad
	:	Rate - Rs.50 per Square Metre
WATER	:	72000 Cubic Metres per Day in Waluj 8000 Cubic Metres per day in Chikalthana
	:	Rate - Re.2.00 per Cubic Metre
POWER	:	13 MVA in Waluj 70 MVA in Chikalthana
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone, Telex and teleprinter facilities, STD links with Bombay
MANPOWER	:	Industrial Training Institute, a Government Industrial Training Workshop, an Engineering College, a Polytechnic, an Institute of Technology and a Centre for Electronic Design and Technology
INTERNAL TRANSPORT	:	Regular ST Bus services between the City and the Area
FACILITIES IN THE AREA	:	Banks, post office, dispensary; hotels; police station in Chikalthana and bank and post office in Waluj
SOCIAL AMENITIES	:	Several schools including English medium, several colleges including faculties in law, medicine, engineering, pharmacy; Civil Hospital, Govt. Medical College with hospital, private clinics and a number of dispensaries; 5 Star hotels; clubs; housing on rental in the city in addition to housing offered by CIDCO and plots by MHADA

BHANDARA

LOCATION	:	925 kms by rail from Bombay. Nearest airport Sonegaon, Nagpur is 70 kms
LAND	:	140.10 hectares in the MIDC Indl. Area, 18 kms from Bhandara town
	:	Rate - Rs.10 per Square Metre
WATER	:	7200 Cubic Metres per Day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	20 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone connections from Lakhni telephone exchange and long distance telex connections from the Nagpur city telex exchange
MANPOWER	:	Industrial Training Institute, Gondia
INTERNAL TRANSPORT	:	ST buses stop near the Area on request
SOCIAL AMENITIES	:	38 primary and secondary schools including English medium; 5 junior colleges; Government's General Hospital and three nursing homes; clubs; houses available in the town.

CHANDRAPUR

LOCATION	:	156 kms by road and 187 kms by rail from Nagpur. Nearest airport Sonegaon, Nagpur
LAND	:	214.48 hectares in the MIDC Indl. Area, 11 kms from Chandrapur City
	:	Rate - Rs.10 per Square Metre
WATER	:	4500 Cubic Metres per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	30 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities
MANPOWER	:	Industrial Training Institute, Government Polytechnic
INTERNAL TRANSPORT	:	ST bus services from the town to Area
FACILITIES IN THE AREA	:	Bank, canteen, post office, police station at Padoli (3 kms)
SOCIAL AMENITIES	:	25 primary and secondary schools 1 convent; 6 colleges including a private engineering college; a civil hospital, several nursing homes and dispensaries; clubs; air-conditioned hotels, lodges, restaurants, chopping centres; theatres; houses on rental basis

CH IPLUN

LOCATION	:	250 kms from Bombay by road and 155 kms from Ratnagiri, connected to Bombay by a daily air service
LAND	:	Three industrial locations (Dist. from Chiplun) Kherdi 77 hectares (4 kms) Gane Khadpoli 97 hectares (6 kms) Lote Parshuram 575 hectares (12 kms)
	:	Rate - Rs.15 per Square Metre
WATER	:	14000 Cubic Metres per Day for Kherdi and Gane Khadpoli; 72000 Cubic Metres per day for Lote Parshuram
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	Kherdi 8 MVA Gane Khadpoli 3.15 MVA Lote Parshuram 3.15 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	City telephone exchange at Chiplun - for Kherdi and Gane Khadpoli; for Lote Parshuram, one in the area
MANPOWER	:	Industrial Training Institute, Kherdi
INTERNAL TRANSPORT	:	ST and local bus services from Chiplun to the three areas, taxi service and auto-rickshaws
FACILITIES IN THE AREA	:	MIDC's Common Facility Centres at Kherdi and Lote-Parshuram Housing Bank, canteen, dispensary and post office
SOCIAL AMENITIES	:	21 schools; 3 convents; a private polytechnic and a college; Municipal Council Hospital, private hospitals and medical practioners; housing facilities in the town

DHULE

LOCATION	:	341 kms by road from Bombay. Connected to Chalisgaon on Delhi-Bhusawal-Bombay Main Broad gauge line
LAND	:	215.35 hectares in the MIDC Industrial Area, 3 kms from Dhule city
	:	Rate - Rs.15 per Square Metre
WATER	:	5000 Cubic Metres per Day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	80 MVA in the old area and a 33/11 KV sub-station in the new area
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities. Bombay "on demand"
MANPOWER	:	Industrial Training Institute, Technical High School; Engineering College and a Government Polytechnic
INTERNAL TRANSPORT	:	ST bus services link the area to the city. Taxies and rickshaws in addition
SOCIAL AMENITIES	:	Primary and High schools; general hospital, maternity homes and dispensaries; rental accomodation as also co-operative housing societies

GADCHIROLI

LOCATION	:	250 kms by road from Nagpur. Connected by a daily air service with Bombay. Nearest railway Station Wadsa-Desaigunj is 45 kms away. Gadchiroli is the headquarter of the only no industry district in the State
LAND	:	80.55 hectares in the MIDC Industrial Area, 3.5 kms from Gadchiroli town
	:	Rate - Rs.10 per Square Metre
WATER	:	250 Cubic Metres per Day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	10 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities
MANPOWER	:	Industrial Training Institute, Technical Institute and a Government Polytechnic
INTERNAL TRANSPORT	:	ST bus services link the area to the city.
SOCIAL AMENITIES	:	Several schools including an English medium, a college; a Zilla Parishad Hospital, a nursing home besides private practitioners; housing on rental basis in town as also from MHADA

JALGAON

LOCATION	:	433 kms by road and 420 kms by rail from Bombay and is connected to Surat in Gujarat State
LAND	:	631.88 hectares in the MIDC Industrial Area, 3 kms from Jalgaon town
	:	Rate - Rs.30 per Square Metre
WATER	:	20400 Cubic Metres per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	75 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities and STD link with Bombay
MANPOWER	:	Industrial Training Institute, Government Polytechnic and two engineering colleges
INTERNAL TRANSPORT	:	ST bus services link the area to the city.
FACILITIES IN THE AREA	:	Branch of State Bank of India; a post office; dispensary and a canteen in the MIDC Common Facility Centre. A police chowkie in the area
SOCIAL AMENITIES	:	2 English medium schools in addition to several other colleges; a Govt. hospital as private hospitals and nursing homes; co-operative housing colonies, houses on rental plus under MIDC and MHADA's housing schemes

JALNA

LOCATION	:	440 kms by road and 438 kms by rail from Bombay via Manmad on the metre gauge Manmad-Kachiguda line. The nearest airport Aurangabad is 67 kms away
LAND	:	158.11 hectares in the MIDC Industrial Area, 5 kms from Jalna town
	:	Rate - Rs.20 per Square Metre
WATER	:	5 Million gallons per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	10 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone facilities from the city exchange
MANPOWER	:	Industrial Training Institute and a Government Polytechnic
INTERNAL TRANSPORT	:	ST bus services link the area to the city in tandem with shift timings
FACILITIES IN THE AREA	:	A branch of State Bank of Hyderabad, a post office and a canteen in the MIDC Common Facility Centre
SOCIAL AMENITIES	:	High schools including English medium; colleges with arts, science, commerce and law faculties, post-graduation course in business and marketing management; Mission hospital in addition to a number of private hospitals and dispensaries; houses on rental basis

KALMESHWAR

LOCATION	:	20 kms by road from Nagpur-Kotol Road and 22 kms on Nagpur-Amravati Road. Nearest airport Nagpur is 25 kms away
LAND	:	109.68 hectares in the MIDC Industrial Area, 1 km from Kalmeshwar Road Railway Station
	:	Rate - Rs.15 per Square Metre
WATER	:	4800 cubic metres per Day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	16 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone exchange in the area. Units are given telex connections from the Nagpur Telex exchange
MANPOWER	:	Available from Nagpur
INTERNAL TRANSPORT	:	ST bus services (4 per day)
SOCIAL AMENITIES	:	Primary, secondary and high schools with a junior college for science; one primary health centre, small dispensaries and 14 private practitioners; 12000 houses to be made available under VHADB scheme. Proximity to Nagpur opens many recreational avenues and social amenities

KHAMGAON

LOCATION	:	557 kms by road from Bombay and 300 kms from Nagpur on NH-6. 548 kms by rail from Bombay and 10 kms from Jalamb railway station on Bombay-Howrah line
LAND	:	201.29 hectares in the MIDC Industrial Area, 4 kms from Khamgaon town
	:	Rate - Rs.15 per Square Metre
WATER	:	3000 cubic metres per Day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	10 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities
MANPOWER	:	Industrial Training Institute, Govt. Polytechnic and a private engineering college
INTERNAL TRANSPORT	:	ST bus services link the area to the city as also matador services by private transporters
FACILITIES IN THE ARUA	:	Banks, police chowkies, canteen, MIDC guest house
SOCIAL AMENITIES	:	Primary, secondary and high schools including an english medium, a technical school, colleges with post-graduation facilities an two homeopathy colleges; a Govt. and a municipal hospital each, besides qualified doctors and specialists; houses on rental basis

KOLHAPUR

LOCATION	:	390 kms by road and 519 kms by rail from Bombay. Nearest airports Ratnagiri 100 kms and Belgaum, 112 kms away by road
LAND	:	299.90 hectares in the MIDC Industrial Area Shirol, 15 kms from Kolhapur town 218.34 hectares in MIDC Industrial Area Gokul-Shirgaon, 15 kms from Kolhapur town Rate - Rs.40 per Square Metre
WATER	:	3840 cubic metres per Day for Shirol and 45000 cubic metres per day for Gokul-Shirgaon Rate - Re.2.00 per Cubic Metre
POWER	:	15 MVA for Shirol 6.5 MVA for Gokul-Shirgaon Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	MIDC MAX-II exchange at Shirol and MIDC MAX-III exchange at Gokul-Shirgaon; STD; ITD facilities to 14 countries
MANPOWER	:	Two Industrial Training Institutes, Three Polytechnics; two engineering colleges, SISI Training centre and Shivaji Technical Institute
INTERNAL TRANSPORT	:	ST buses en route to other cities halt at MIDC areas
FACILITIES IN THE AREA	:	Banks and post office in both the areas; canteens; dispensary and police station in Shirol
SOCIAL AMENITIES	:	Schools including english medium; colleges with post-graduation facilities; college of architecture; 3 star hotels; clubs, swimming pools; several hospitals and specialists; new housing colonies in addition to houses on rental basis

KUDAL

LOCATION	:	305 kms by road from Bombay on Bombay-Goa NH-17. Air-link via Goa and Belgaum(95 kms)
LAND	:	275.65 hectares in the MIDC Industrial Area
	:	Rate - Rs.10 per Square Metre
WATER	:	13500 cubic metres per Day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	22.5 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone connections from an automatic exchange
MANPOWER	:	Industrial Training Institutes, Sawantwadi
INTERNAL TRANSPORT	:	Frequent bus services link the area to the city
FACILITIES IN THE AREA	:	Banks, post office; canteens, police chowkie, MIDC guest house
SOCIAL AMENITIES	:	One high school with a junior college for english medium one at Sawantwadi (15 kms) and Vengurla (15 kms), one college with arts and commerce faculties. Primary health centre near the area, two private clinics, mission hospital at Vengurla, houses on rental basis. MIDC has earmarked 12 acres of land as residential zone

MAHAD

LOCATION	:	176 kms by road from Bombay on NH-17
LAND	:	460.42 hectares in the MIDC Industrial Area, 5 kms from Mahad town
	:	Rate - Rs.40 per Square Metre
WATER	:	From minor Irrigation Department's weir on Kal river
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	25 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone exchange in the town and MAX-III exchange at Birwadi (4 kms)
MANPOWER	:	Industrial Training Institute, plus a Govt. Technical Institute
INTERNAL TRANSPORT	:	ST buses between Mahad and Birwadi pass through the area
FACILITIES IN THE AREA	:	Bank, work of effluent disposal system is in progress. Post office; police station, etc. in the town
SOCIAL AMENITIES	:	Several schools including english medium, college of arts, commerce and science, municipal council's dispensary, 14 private dispensaries, maternity homes, lodges, clubs, housing colonies at several places

MURBAD

LOCATION	:	30 kms by road from Kalyan, which is 52 km by rail from Bombay
LAND	:	126.08 hectares in the MIDC Industrial Area, on the outskirts of Murbad town
	:	Rate - Rs.75 per Square Metre
WATER	:	4800 cubic metres per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	25 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone exchange in the area and telex facilities
MANPOWER	:	Industrial Training Institute, Ambernath
INTERNAL TRANSPORT	:	Regular bus services between Murbad and Kalyan in addition to taxies and auto-rickshaws
FACILITIES IN THE AREA	:	Post office in the area. Rural hospital, restaurants, police station in Murbad town
SOCIAL AMENITIES	:	Several schools including english medium, a junior college upto Standard XII, a college with arts, commerce and science faculties; a Zilla Parishad hospital and private practitioners, a co-operative housing society, 24 flats in two MIDC buildings, plus land reserved by MHADA for residential purposes

NAGPUR

LOCATION	:	859 kms by road, 837 kms by rail and an hour away by air from Bombay. Central place in India
LAND	:	706.75 hectares in the MIDC Industrial Area Hingna, 8 kms from Nagpur city
	:	Rate - Rs.30 per Square Metre
WATER	:	7500 cubic metres per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	110 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone exchange in the area and city telex exchange serves the area too. STD links with 56 major cities in the country
MANPOWER	:	Industrial Training Institute, a Govt. polytechnic and a regional engineering college
INTERNAL TRANSPORT	:	ST buses operate services on routes and timings convenient to the workers
FACILITIES IN THE AREA	:	Banks, canteens, dispensary, police station, post office
SOCIAL AMENITIES	:	Scores of schools including 20 english medium, 48 colleges and the Nagpur University with 32 Depts., medical colleges and a dental college, modern hospitals including the Govt. Medical College and Hospital, the biggest in Asia, private clinics, 3 & 5 star hotels, clubs, several housing colonies

NANDED

LOCATION	:	630 kms by road from Bombay, by rail via Manmad Junction and by air over an hour away, thrice a week. 275 kms by road from Aurangabad, also connected by air service
LAND	:	312.01 hectares in the MIDC Industrial Area, 10 kms from Nanded Railway Station
	:	Rate - Rs.15 per Square Metre
WATER	:	6000 cubic metres per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	Ample supply from Waghala sub-station
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone facilities and Bombay "on demand"
MANPOWER	:	Industrial Training Institute and two private ITIs, a Govt. Polytechnic and two engineering colleges
INTERNAL TRANSPORT	:	ST bus services link the area to the city
FACILITIES IN THE AREA	:	Banks, post office, nursing home and hotel
SOCIAL AMENITIES	:	Number of schools including an english meium, several colleges besides Ayurvedic, education, law and pharmacy college each; two Govt. hospitals and several private hotels, clubs, stadium, swimming pool, CIDCO's tenements for workers and a number of housing colonies

NASIK

LOCATION	:	190 kms by road from Bombay, by rail on electrified broad guage section and a daily air service
LAND	:	637 hectares in Satpur MIDC Indl. area, 521 hectares in Ambad MIDC Indl. area. Both these areas are closeby and 18 kms from Nasik road station and 6 kms from Nasik town
	:	Rate - Rs.80 per Square Metre
WATER	:	24000 cubic metres per day
	:	Rate - Re.2.00 per Cubic Metre
POWER	:	90 MVA at Satpur 16 MVA at Ambad
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Separate telephone exchanges for Satpur and Ambad, city telex exchange for telex needs of the two areas, besides STD links to 250 cities and ITD links with 14 countries
MANPOWER	:	Industrial Training Institute, a Govt. Polytechnic
INTERNAL TRANSPORT	:	ST bus services link the area to the city on routes convenient to the workers
FACILITIES IN THE AREA	:	Banks, post office, canteen, fire fighting station, police station and recreation centre
SOCIAL AMENITIES	:	Several schools including english medium and a Govt. public school, colleges, civil hospital and number of private nursing homes, several A-grade hotels; CIDCO and MHADA's housing schemes besides cooperative housing societies

PAITHAN

LOCATION	:	45 kms by road from Aurangabad, which is connected to Bombay by a daily air service
LAND	:	285.51 hectares in MIDC Indl. area, 5 kms from Paithan town
	:	Rate - Rs.20 per Square Metre
WATER	:	1.5 million gallons per day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	20 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	SAX for telephone facilities
MANPOWER	:	Industrial Training Institute, engineering and polytechnic colleges at Aurangabad
INTERNAL TRANSPORT	:	ST buses en route to other cities halt opposite the area. Also, a separate service from town to the area. Private tempos between Paithan and Aurangabad
FACILITIES IN THE AREA	:	Banks, post office and a police chowkie
SOCIAL AMENITIES	:	Several schools including two primary english medium, a college and a Govt. college for Diploma in education, primary health centre and four private dispensaries, houses on rental basis in the town and also in the area in the residential zone developed by the MIDC

PATALGANGA

LOCATION	:	90 kms by road from Bombay
LAND	:	313.17 hectares in MIDC Indl. area, 12 kms from Panvel town
	:	Rate - Rs.200 per Square Metre
WATER	:	24000 cubic metres per day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	50 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	MAX-II automatic telephone exchange in the area. Telex facilities to be made available in future
MANPOWER	:	Engineering college, Pen
INTERNAL TRANSPORT	:	ST bus services between Panvel town and the area
FACILITIES IN THE AREA	:	Bank, post office and hotel in the MIDC Common Facility Centre, besides police outpost and effluent disposal system
SOCIAL AMENITIES	:	English and Marathi medium school of Hindustan Organic Chemicals Ltd. at Rasayani near Panvel, one arts and commerce college at Pen; 50-bedded HOC's hospital in HOC colony, plot allotted for school to patalganga Rasayani Industries' Association and a plot for a hospital in the housing zone, 12 buildings with 144 blocks in MIDC's housing zone

RATNAGIRI

LOCATION	:	390 kms by road on NH-17 and less than an hour away by air from Bombay. Nearest railway station Kolhapur, is 130 kms away
LAND	:	634 hectares in MIDC Indl. area
	:	Rate - Rs.10 per Square Metre
WATER	:	24000 cubic metres per day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	50 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities
MANPOWER	:	Industrial Training Institute and a Govt. Polytechnic
INTERNAL TRANSPORT	:	ST bus services for the area, private taxies, auto-rickshaws
FACILITIES IN THE ARUA	:	Bank, post office and a canteen in the MIDC Common Facility Centre, besides a guest house, dispensary and a police outpost in the area
SOCIAL AMENITIES	:	Primary and secondary schools, colleges including a B.Ed and a law college, civil hospital, besides a number of private clinics and nursing homes, hotels, clubs, stadium, MHADA and MIDC have adequate arrangements for residential complexes for industrial workers

ROHA

LOCATION	:	130 kms by road from Bombay
LAND	:	240.44 hectares in MIDC Indl. area at village Dhatav, on the outskirts of Roha town (chemical zone)
	:	Rate - Rs.75 per Square Metre
WATER	:	27000 cubic metres per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	25 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities
MANPOWER	:	Industrial Training Institute at Mahad 50 kms away and a Training Institute in the area started by the Rathil Trust
INTERNAL TRANSPORT	:	ST bus services link the area to the town as also Roha town with Bombay
FACILITIES IN THE AREA	:	Banks, post office and a guest house in the MIDC Common Facility Centre, hotel, police station, recreation centre, mini auditorium, effluent disposal system and fire fighting services exist in the area
SOCIAL AMENITIES	:	Primary schools including english medium, one english medium high school and a high school with a junior college, private clinics and dispensaries besides a 40-bedded hospital of the Roha Ashtami Residents Association, housing scheme of MHADA being planned, housing facilities created by major units for their executives/workers in addition to houses from the MIDC as also 30 acres being earmarked in the additional area

SANGLI-MIRAJ

LOCATION	:	428 kms by road from Bombay on Pune-Bangalore NH-4 and a main Central Railway Junction on broad gauge line. Air strip for Dakotas but no regular air service as yet
LAND	:	393.53 hectares in MIDC Indl. area at Kupwad and Miraj Blocks, 5 kms from Sangli as well as Miraj
	:	Rate - Rs.20 per Square Metre
WATER	:	14400 cubic metres per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	10 MVA at Kupwad and 25 MVA at Miraj
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone facilities including STD links with Bombay
MANPOWER	:	Industrial Training Institute and an Engineering college
INTERNAL TRANSPORT	:	ST bus services at regular frequency between the area and Sangli-Miraj
FACILITIES IN THE AREA	:	Banks, post office and a canteen in Miraj Indl. area
SOCIAL AMENITIES	:	Several schools including english medium, colleges with faculties in law, medicine, engineering, etc. civil hospital, mission hospital, private clinics and dispensaries, hotels, clubs, flats and bungalows on rental or outright purchase basis, besides 20 acres of land reserved by MIDC

SATARA

LOCATION	:	300 kms by road on NH-4 and 338 kms by rail from Bombay
LAND	:	342.22 hectares in MIDC Indl. area, 5 kms from Satara city
	:	Rate - Rs.25 per Square Metre
WATER	:	25000 cubic metres per day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	40 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	MAX-II telephone exchange in the area. City telex exchange provides telex connections to the area. Bombay "on demand" service
MANPOWER	:	Industrial Training Institute, a Technical high school, a Govt. Polytechnic and an Engineering college
INTERNAL TRANSPORT	:	ST bus services link the area to the city
FACILITIES IN THE AREA	:	Bank, canteen, post office and police outpost Miraj Indl. area
SOCIAL AMENITIES	:	Several schools including english medium, colleges with faculties in law, Teachers training college and an Ayurvedic Medical college, many private clinics and nursing homes, hotels, clubs, houses available on rental basis in the town and in the area, under MIDC housing scheme

SOLAPUR

LOCATION	:	433 kms by road and 456 kms by rail and less than an hour away by air from Bombay
LAND	:	216.48 hectares in MIDC Indl. area, 1/2 kms from Solapur city
	:	Rate - Rs.25 per Square Metre
WATER	:	1500 cubic metres per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	15 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone and telex facilities besides STD links with Bombay
MANPOWER	:	Industrial Training Institute and one especially for girls, a Govt. technical high school, three polytechnics and an engineering college
INTERNAL TRANSPORT	:	City bus service operated by the Solapur Municipal Corporation pass through the area
FACILITIES IN THE AREA	:	Branch of the State Bank of India, close to the area, post office, administrative office, a dispensary and a guest house in the MIDC Common Facility Centre
SOCIAL AMENITIES	:	Several schools including english medium, several colleges including college of Medicine and Pharmacy each, civil hospital, many private hospitals and nursing homes, hotels, clubs, co-operative housing societies in town, besides residential zone developed by the MIDC for industrial units

TARAPUR

LOCATION	:	105 kms from the International Airport, Bombay by road, off Bombay-Ahmedabad NH-8 and 98 kms by rail from the Bombay Central Railway Station. Nearest railway station Boisar, 1 km away is on the Western railway
LAND	:	832.33 hectares in MIDC Indl. area
	:	Rate - Rs.100 per Square Metre
WATER	:	6.40 million gallons per day
	:	Rate - Re.1.45 per Cubic Metre
POWER	:	100 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	An automatic telephone exchange and a telex exchange in the area
MANPOWER	:	Industrial Training Institute 9 kms away, plus skilled manpower from Bombay and Thane
INTERNAL TRANSPORT	:	ST bus services from Boisar, the nearest railway station, to the Area in tandem with trains' arrivals and departures
FACILITIES IN THE AREA	:	Bank, post office, canteen, guest house in the MIDC Common Facility Centre in addition to a fire station, police station, hospitals and a recreation centre
SOCIAL AMENITIES	:	An english medium school in the area, a secondary high school in the Tarapur Atomic Power Project's colony, an arts and commerce college in the nearby town of Palghar, a Mission Hospital at Dahanu, a Primary health centre at Palghar, housing facilities for workers and executives by CIDCO and MIDC

WARDHA

LOCATION	:	877 kms by road and 889 kms by rail from Bombay and only 69 kms from Nagpur Airport. Nagpur is connected to Bombay by a daily air service
LAND	:	312.19 hectares in MIDC Indl. area, 3 kms from Wardha city
	:	Rate - Rs.20 per Square Metre
WATER	:	4500 cubic metres per day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	10 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	STD links with 56 cities from the auto exchange in the city
MANPOWER	:	Industrial Training Institute, College of Engineering and a Rural Polytechnic
INTERNAL TRANSPORT	:	ST bus services between the city and the Sevagram pass through the area
FACILITIES IN THE AREA	:	Bank, post office and a canteen in the MIDC Common Facility Centre
SOCIAL AMENITIES	:	Scores of schools including English medium, junior colleges as also colleges for higher education including faculties in law and education, a civil hospital and a hospital attached to the Medical College, houses on rental basis as well as in the new housing colonies in the city

YAVATMAL

LOCATION	:	175 kms by road from Nagpur, which also is the nearest airport. A narrow gauge railway line connects Yavatmal to the Bombay-Calcutta main line
LAND	:	204.13 hectares in MIDC Indl. area, 5 kms from Yavatmal town
	:	Rate - Rs.15 per Square Metre
WATER	:	1000 cubic metres per day
	:	Rate - Re.1.15 per Cubic Metre
POWER	:	3.15 MVA
	:	Rate - Rs.30 per Month per KVA + Re.0.80 per Unit
TELECOMMUNICATIONS	:	Telephone facilities. STD services available
MANPOWER	:	Industrial Training Institute, a Technical High School and a Govt. Polytechnic
INTERNAL TRANSPORT	:	Request stop at Lohara (1 km away)
FACILITIES IN THE AREA	:	Canteen, police outpost in the area. Banks, post offices, dispensary etc. in the nearby town
SOCIAL AMENITIES	:	Several schools including english meium, junior and senior colleges, three Govt. hospitals, 150 private clinics/hospitals, housing on rental basis in town

The latest scheme titled "Package Scheme of Incentives 1988" introduced in the State from 1.10.88 for a period of five years, till 30th Sept. 1993 are classified as follows :

A. Under Part-I :

- i) Special capital incentive
- ii) Sales tax exemption/Deferral
- iii) Sales tax incentives as an interest free unsecured loan under certain specified circumstances

B. Under Part-II : Sales tax deferral only

C. Incentives for Expansion/Diversification

- i) Special capital incentive
- ii) Sales tax exemption/Deferral
- iii) Sales tax incentives as an interest free unsecured loan under certain specified circumstances

D. Refund of electricity duty

E. Refund of octroi

F. Preferential treatment in the purchase programmes of Govt./ Govt. undertakings/statutory bodies

G. Contribution towards cost of feasibility study

H. Additional incentives on credit points

It may be noted that Part-I and II schemes of incentives are mutually exclusive and no unit would be eligible to get both the incentives simultaneously.

The option once exercised shall be final and binding on the unit.

Deferment Period : The period for which the Sales tax liability will be deferred under Part-I and II will be 10 years from the date of availment and shall be repayable thereafter in five equal annual instalments.

The summary of the above incentives are given in the following pages :

SUMMARY OF INCENTIVES

Incentives for Medium/Large Scale Units

Area	For a New Unit				For Expansion/Diversification			
	Sales Tax Incentive by way of Exemption/Deferral		Special Capital Incentive as a Grant		Sales Tax Incentive by way of Exemption/Deferral		Special Capital Incentive as a Grant	
	Period as under or earlier if the ceiling is reached	Ceiling as percentage of FCI	Quantum as percentage of FCI	Ceiling in Rs. Lakhs	Period as under or earlier if the ceiling is reached	Ceiling as percentage of FCI	Quantum as percentage of FCI	Ceiling in Rs. Lakhs
Group-B	5 Years	60	20	20	4 Years	50	15	20
Group-C	7 Years	75	25	25	6 Years	60	20	25
Group-D	9 Years	90	30	30	8 Years	70	25	25
Pioneer Unit	10 Years	95	30	30	9 Years	80	25	25
No Industry District	10 Years	100	30	30	9 Years	85	25	25

Incentives for Small Scale Scale Units

Area	For a New Unit				For Expansion/Diversification			
	Sales Tax Incentive by way of Exemption/Deferral		Special Capital Incentive as a Grant		Sales Tax Incentive by way of Exemption/Deferral		Special Capital Incentive as a Grant	
	Period as under or earlier if the ceiling is reached	Ceiling as percentage of FCI	Quantum as percentage of FCI	Ceiling in Rs. Lakhs	Period as under or earlier if the ceiling is reached	Ceiling as percentage of FCI	Quantum as percentage of FCI	Ceiling in Rs. Lakhs
Group-B	5 Years	100	25	10	4 Years	85	20	20
Group-C	7 Years	100	30	15	6 Years	85	25	20
Group-D	9 Years	100	35	20	8 Years	85	35	20
No Industry District	10 Years	100	35	20	9 Years	90	35	20

FCI : Fixed Capital Investment

The maps presented in the following pages will give the classification of areas under 1988 package scheme of incentives :

Communication

The communication network in the State is presented below, giving the National Highway, State highway, railway line, air port, seaport, etc.

Status of Agro Processing

India's processed fruit and vegetable industry occupies an important role in the country's programme of industrial export development. The districtwise and categorywise break-up of the factories licensed at the end of 1988 is placed in the next page :

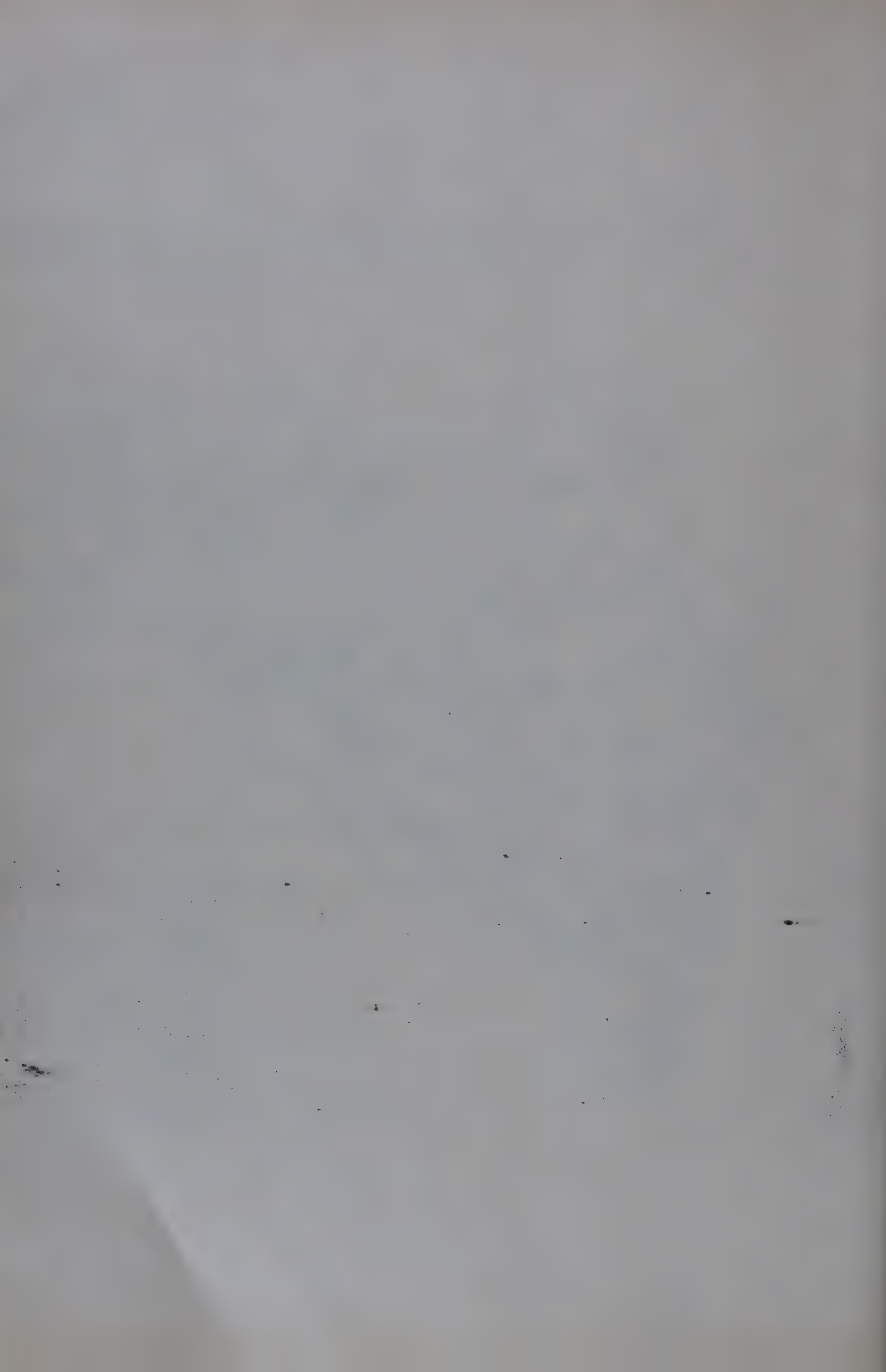
Agro-Processing Projects Under Implementation :

The following statement will give the list of the different agro-processing projects ready for implementation by the Government of Maharashtra. This statement covers the name of the project, production, capacity and project cost.

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COMMUNICATION NETWORK OF MAHARASHTRA





REGISTERED AGRO BASED INDUSTRIES IN MAHARASHTRA

DISTRICTS	AGRO & FOOD INDUSTRIES WITH DIC (1988)	FRUIT & VEG INDUSTRIES WITH FPO	FOOD INDUSTRY IN SSI SECTOR
1 BHANDARA	224		124
2 CHANDRAPUR	116		152
3 GADCHIROLI	97		25
4 NAGPUR	936	32	
5 WARDHA	46	1	45
6 AKOLA	344		134
7 AMRAVATI	119	4	153
8 BULDHANA	138	2	116
9 YEOTMAL	249		83
10 AURANGABAD		4	
11 BEED	780		58
12 LATUR		1	102
13 JALNA			22
14 NANDED		2	98
15 PARBHANI			81
16 USMANABAD	20		22
17 AHMADNAGAR	159	7	70
18 DHULE	138		97
19 JALGAOAN	267	20	160
20 NASIK	325	16	
21 KOLHAPUR		8	
22 SANGLI		2	79
23 SATARA	271	16	53
24 SOLAPUR	105	4	256
25 PUNE		57	
26 THANE		37	
27 RAIGAD		13	85
28 RATNAGIRI	288	58	63
29 SINDHUDURG	130	22	45
30 GR BOMBAY		208	
TOTAL MAHARASHTRA	4752	514	2123

NOTE: Blank space in the column indicates data not available.

STATEMENT SHOWING THE DETAILS OF AGRO-PROCESSING SOCIETIES
AT VARIOUS STAGES AS ON 31.3.90

(Rs. in Lakhs)				
Sl. No.	Name of the Project	Production	Project Cost	Capacity (M.T.)
1.	Ambegaon Tal. Tomato Potato Processing Co-operative Society Ltd., Manchar, Taluka Ambegaon, Dist. Poona (Fruit Processing)	Tomato paste, jam/jelly, potato chips	6.70	1.90/ year
2.	Mohapa Co-operative Agro-Processing Society Ltd., Mohapa, Taluka Kalameshwar, Dist. Nagpur (Fruit Processing)	Orange, pineapple juice, mango, pulp, tomato paste	62.88	2100/ year
3.	Mahatma Phule Anusuchit Jati Shetkari Sahakari Starch Karkhana Ltd., Solapur (Starch Karkhana)	Starch, glucose,	857.00	100/ year
4.	Vasantdada Sahakari Santra Prakriya Society Ltd., Narkhed, Dist. Nagpur (Fruit Processing)	Orange juice, mango pulp, tomato paste	664.84	200/ day
5.	Datta Shetakari Vinkari Sah. Soot Girni Ltd., Ichalkaranji, Dist. Kolhapur (Roller Flour Mill)	Rawa, atta, maida	95.00	60000/ year
6.	Kissan Sahakari Prakriya Society Ltd., Vadegaon (P), Taluka Sinnar, Dist. Nasik (Mini Pepper Plant)	Straw board, mill board	59.69	5/ day
7.	Sahayadri Sah. Shetimal Prakriya Society Ltd., Phaltan, Dist. Satara (Fruit and Vegetable Processing)	Fruit juice, tomato paste	272.13	2/ hour
8.	Pandhari Prasad Phal Utpadak Sah. Society Ltd., Sangola, Dist. Solapur (Fruit and Vegetable Processing)	Tomato paste, jam, jelly, mango pulp	325.00	1800/ year

Contd....

Sl. No.	Name of the Project	Production	Project Cost	Capacity (M.T.)
9.	Sanjivani Agro Producers' Co-op. Marketing Society Ltd., Kopergaon, Dist. Ahmednagar (Fruit and Vegetable Processing)	Tomato paste, mango pulp, jam/jelly, ketchup	958.00	150/shift
10.	Kisan Sah. Starch Manufacturing Society Ltd., Pushkar Niwas, Vidhyanagar, Deopur, Dhule (Starch Karkhana)	Starch, liquid glucose, Maizeoil cattlefeed	2300.00	Starch 39000 Glucose 10000 per year
11.	Saptashringi Sah. Starch Factory Ltd., Manur, Kalwan, Nasik (Starch Karkhana)	Starch, liquid glucose, dextrose monohydrate	832.58	60
12.	Malegaon Tal. Shetkari Sah. Starch Factory Ltd., Malegaon, Nasik (Starch Karkhana)	Starch liquid glucose	443.39	40/day
13.	Jalgaon Dist. Sah. Starch Factory Ltd., Jalgaon, Naldawadi, Jamner (Starch Karkhana)	Starch, liquid glucose, maizeoil deoiled cake	2591.28	200/day
14.	Jaikisan Sah. Rawa, Maida Society Ltd., Islampur, Valwa, Sangli (Roller Flour Mill)	Rawa, maida, atta	110.00	60/day
15.	Vasantdada Sah. Maka Prakriya Karkhana Ltd., Ranjani, Kavathe-Mshankal, Sangli (Starch Karkhana)	Starch, glucose syrup dextro-monohydrate	2238.00	100/day
16.	Jalgaon Dist. Co-op. Tomato Processing Society Ltd., Chopada, Jalgaon (Fruit Processing)	Mango pulp concentrate, tomato paste	406.25	80/shift

Contd....

Sl. No.	Name of the Project	Production	Project Cost	Capacity (M.T.)
17.	Maharashtra Co-op. Agro Industries Ltd., Punadi, Walva, Tal. Tasgaon, Sangli	Gibralic acid	284.26	2/ year
18.	Neelkamal Stalkply Co-op. Society Ltd., Parola, Jalgaon	Chip - Boards, Black-boards, plywood	1095.75	603/ day
19.	Jawahar Sah. Medium Density Fibre Board Karkhana Ltd. Amravati	Fibre boards	496.00	
20.	Padmashri Vikhe Patil Co-op. Seed Growers & Processing Co-op. Society Ltd., Ahmednagar	Oil and vanaspati	4264.50	
21.	Gomati Sah. Telbiya Prakriya Prakalp, Shahada, Dhule	Refined oil, vanaspati, deoiled cake	724.56	Refined oil 50/ day
22.	Saibaba Vanaspati Utpadak Sah. Society Ltd., Nagpur	Vanaspati, refined oil & deoiled cake	1347.00	Oil 100/ day
23.	Vithal Co-op. Limbu-Satva Utpadak Va-Prakriya Society Ltd., Barsi, Solapur	Lemon oil, citric acid, lemon juice, pectin	179.73	2000/
24.	Taluka Shetkari Sah. Dal Mill & Prakriya Society Ltd., Udgir, Latur	Pulses	20.45	10/ shift
25.	Mahalaxmi Co-op. Food Processing Society Ltd., Ahmednagar	Lemon juice, lime oil, pectin	143.00	
26.	Sant Tukaram Fruit and Vegetable Processing Society Ltd., Parbhani	Tomato paste, sauce, jam, jelly, pickle	22.14	70

Contd....

Sl. No.	Name of the Project	Production	Project Cost	Capacity (M.T.)
27.	Shri Warna Krishimal Prakriya Society Ltd., Warnanagar, Panhala, Kolhapur	Mango pulp, banana pulp, puries	500.00	64/ day
28.	Jawahar Shetakari Sah. Partical Board Ltd., Morane, Dhule	Particle board	1327.24	
29.	Maharashtra Co-op. Marketing Federation Ltd., Bombay			150/ year
	i) Cattle feed plant at Nimbut, Baramati, Pune	Cattlefeed	60.84	
	ii) Cattle feed plant at Udgir, Latur	"	155.31	
	iii) Winterisation unit for oil		100.00	
	iv) Silo Project		100.00	
	TOTAL		23543.52	
	AS PER WORLD BANK PATTERN		23543.52	

Source : Dept. of Cooperatives, Government of Maharashtra

INDUSTRIAL STATUS OF AGRO AND FOOD INDUSTRIES IN DIFFERENT DISTRICTS OF MAHARASHTRA

According to the latest available results of Annual Survey of Industries (ASI), 1985-86, Maharashtra continues to be in the leading position in the industrial scene of India. The State accounted for 23 and 26% of gross value of output and of value-added respectively in organised industrial sector of the country.

As per factory statistics, 1989, there were 18,294 working factories in the State. Out of these, 16% factories were located in rural areas, their share in total factory employment was about 14%. In rural areas, most of the factories belong to manufacture of food products (25%). From the point of consideration of employment in rural areas, the major share was of factories manufacturing of food and food products (32%).

The industry groups

1. Food products
2. Beverage tobacco and tobacco products
3. Cotton textile
4. Textile products
5. Paper and paper products
6. Rubber plastic, petroleum and coal products
7. Chemicals and chemical products
8. Malted products
9. Machinery
10. Electrical making apparatus, application
11. Transport equipment.

These contribute substantially to industrial production of the State.

There are 21785 working factories, with an average daily number of workers 1134 and 1585 number per lakh of population during 1988-89.

With the new base of 1980-81, the All-India index number of industrial production (for manufacturing sector) for 1989 was 192.60 showing an increase of 10.4% over the index number of 1988.

Among the industries group, food products stands first, with a value addition of Rs.336 crores (5.4%), with a fixed capital of Rs.705 crores, with a working capital of Rs.283 crores, utilising 355 lakh mandays with a total output of Rs.3800 crores (11.5%).

Number of new factories registered during 1988, was 2270, food products including sugar factories constitute 7.7%.

In rural areas, the workers of primary sector consists of the activities of cultivation, agricultural labour fishing constitute 64% of workers population in the State. Among the rural category 84% of the female workers constitute rural category.

In percentage of employment in manufacturing sector, food products stands second, having 9.7% of workers, against cotton and textile 19.1%, chemical and chemical products third 9.1%, machinery fourth 8.7%, etc.

There is a regular increase in employment of food product sectors from 7.0% in 1961, 9.5% in 1987 and 9.7% in 1988.

Out of 20 broad industry groups, 5 had 77% of the total number of enterprises. These five groups were (1) wood and wood products 27%; (2) food products, 18%; (3) repair services, 15%; (4) metal products, 9%; and textile, 8%. In rural areas, food products, 20%, comparing to 15% in urban.

In rural areas, the most important group from consideration of employment, was first wood products and the second food products (18%).

The following table gives the percentage distribution of food products (manufacturing sector) factories by size and class of capital.

Percentage Distribution of Food Products and
Factories by Size Class of Capital

Food Products -----	Size Class of Capital (Rs.Lakhs) -----
54.10	0.0-2.5
11.10	2.5-5.0
4.50	5.0-7.5
4.50	7.5-10.0
4.00	10.0-15.0
4.40	15.0-20.0
5.90	20.0-50.0
2.90	50.0 Lakhs -1 crore
4.70	1 crore-5 crores
3.90	5 crores & above

The major money earner of this State is agrarian feature, having an impact on the rural population. By judiciously utilising the agro-resources potential, a State can achieve industrial, financial and social revolution.

The following chapters will give a brief outline of industrial status and potential of all the Districts of Maharashtra.

NANDED

Present Status

There is one big animal meat processing unit at Nanded operated by MAFCO, manufacturing boneless and fatless meat having a capacity to slaughter 50-100 animals/day and producing 3.5 tonnes of packed meat (Buffaloes, veal/small buffaloes, sheep, goats and poultry birds are slaughtered). The production is frozen meat. Deep freezer capacity 250 tonnes.

The above factory also processes frozen mango pulp and peas.

There are two small units processing fruits and 98 other SSI units processing food products like chilly powder, dhania, chillies and processing pulses, oilseeds and wheat (20 pulse mills; 1 roller flour mill, 71 oil expellers). Oil mills are located at Nanded, Deglur, Kandhar and Dharmabad.

A 10 crore project is coming up, utilizing banana fibre for paper pulp.

Scope

There is a scope for setting the following food based industries in the district: Primary grain processing centres, disinfestation centres, cereal flaking unit, dhal mill, fruit and vegetable processing complex, fruit and vegetable dehydration unit, banana processing unit, spice processing unit, etc.

YEOTMAL

Present Status

The District is not better placed in respect of infrastructural facilities. However, facilities existing in the District in respect of road, rail, power, water, communication and industrial estates will compensate to certain extent. There are no large and medium scale agro-industries. Considerable agro-based SSI industries are registered mainly on oil mills, dhal mills, soft drinks and spice industry. Dhal mills are located at Yeotmal. Oil mills are there at Yeotmal, Pandharkavada, Digras, Pusad, Vani and Ghatanji. Cattlefeed unit, bakery unit and bonemeal unit are also located at Yeotmal.

Scope

After considering the resources and demand, few agro-based industries that can be suggested are: primary grain processing and disinfestation centres, jowar flakes unit, dhal milling, oil mills, fruit and vegetable grading centres, centrellised cold storage for fruit and vegetable storage, animal feed plant, etc.

NAGPUR

Present Status

Nagpur is one of the well-developed District in industrialization in Maharashtra. This District has very good infrastructural, transport and communication facilities to start new industry. The NOGA factory in Nagpur is a well-known fruit processing unit. Apart from this few other fruit processing units

mills, bakery units, cold storages, spice processing units, sugar confectioneries, animal feed units are the other agro-based units in the district.

Scope

There is lot of scope for setting up new agro-based industries based on resources and demand like oil mills, dhal mills, rice mills, primary grain processing and disinfestation centres, cereal flaking unit, fruit and vegetable grading centres, fruit and vegetable processing units, cold storage, spice processing unit, abattoir, poultry dressing plant, animal feed units, etc.

BULDHANA

Present Status

In this district nearly 200 SSI agro-based food industries are registered. There is no single large scale industry based on agro-base resources, but few number of medium scale refined oil industries are established. Few dhal mills, oil mills, roller flour mills are located at Khamgaon.

Scope

Agro-based industries like primary grain processing and disinfestation centres, dhal mill, cereal flakes, fruit & vegetable grading centres, centralised cold store, fruit & veg. processing complex, onion grading and storage complex, etc. can be started based on the resources.

SINDHUDURG

Present Status

There are some basic difficulties in industrial field in this District. However, attempts were made to build up infrastructural facilities to set up industries. There are 130 SSI registered agro-based industries at present and no large and medium scale agro-based industries. Fresh mango is exported from the district. There are some fish processing and cashewnut processing units in the district.

Scope

Keeping in view of the resources and demand the following industries can be suggested : Rice mills, primary grain processing and disinfestation centre, fruit and vegetable grading centre, centrellised cold store, fruit and vegetable processing complex, desiccated coconut manufacturing unit, cashewnut processing unit, tamarind/kokum juice concentrate/powder unit, cashewapple liquor unit, animal feed unit, etc.

DHULE

Present Status

There is one large scale oil processing complex is being commissioned by NDDDB for MAHAFED. Keeping in consideration the existing oil industries as well as MAHAFED plant being commissioned new licences for oil processing units (SSI/MS) are not being issued in the district. There are few medium scale food-based industries at present such as maize processing, etc. The major concentration of small scale industries on agro-based are oil mills, dhal mills, chilly grinding, bakery etc. Oil mills are

located Dhule, Dondaiche and Shirpur. There are dhal mills at Nandurbar, Dondaiche and Dhule. In Akkalkua and Dhadgaon talukas, substantial quantity of raw mango is dried and the product called "amsul" is sent into Bombay, Surat and Inore markets. There is a good basic infrastructure and communication facilities.

Scope

Dhule district is one of the most industrially backward district in Western Maharashtra. However, there is a scope for setting up of agro-based industries such as primary grain processing and disinfestation centres, cereal flaking unit, dhal mills, energy food unit, edible groundnut flour unit, fruit & vegetable grading centre, centrellised cold storage, fruit and vegetable processing complex, fruit & veg. dehydration unit, spice processing unit, onion grading and storage complex, mahua alcohol unit, animal feed unit, etc.

USMANABAD

Present Status

In this district, less than 200 agro-based food industries were registered, out of which less than 50 SSI industries are working. The working SS Industries are oil expellers, dhal mills and servicing industries.

Scope

The agro-based industries having scope in the district are primary grain processing and disinfestation centres, cereal flaking unit, dhal mills, spice processing unit, etc.

BEED

Present Status

This district is backward in the matter of industrialization mainly due to the lack of effective transport and communication facilities. Other than sugar factory there are no large and medium scale food processing factories are present in the district. There are 361 permanent registered SSI units in the district out of which only 51 units belong to agro-based. Mainly the SSI units are oil mills and pulse mills.

Scope

The food based industries that can be set up in the district are primary grain processing and disinfestation centres, cereal flaking unit, dhal mill, oil mill, fruit and vegetable dehydration unit, etc.

LATUR

Present Status

The industries present under SSI are mainly oil mills, spice powdering and dhal mills. There is no single unit registered under medium scale. Recently one solvent extraction oil mill is started and also one milk powder unit is working under large scale sector.

Scope

There is a scope to start primary grain processing and disinfestation centres, oil mills, dhal mill, cereal flakes, fruit and vegetable dehydration, cold store, n-triacontanol, animalfeed unit.

AHMEDNAGAR

Present Status

This district is good in the matter of industrialization. There is quite a good number of food industries present in almost all the fields. Infrastructural facilities are available to start new industries. Effective transport and communication facilities are also present to boost up the industrialization.

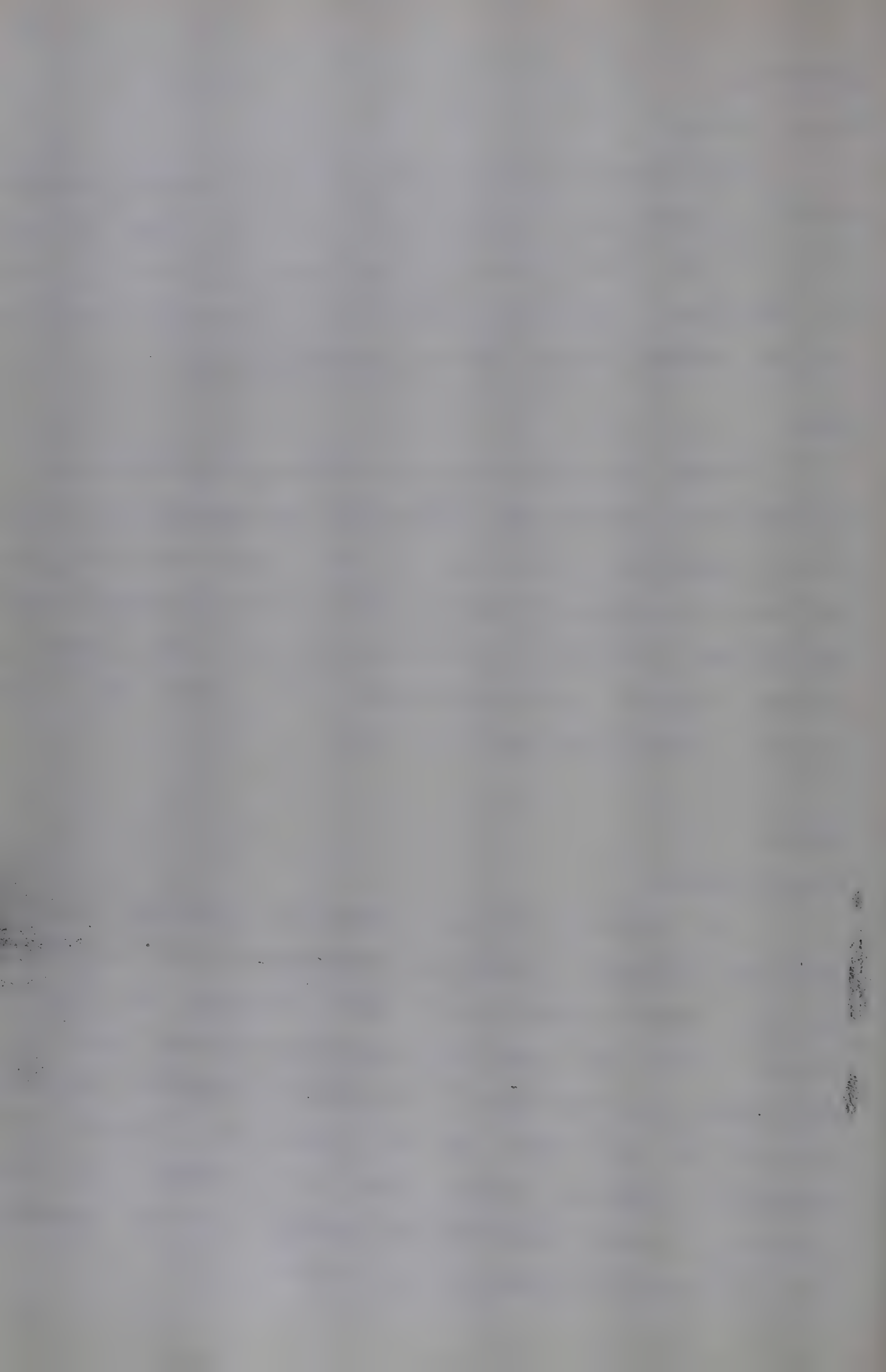
Scope

There is a scope to set up following food-based units in the district: primary grain processing and disinfestation centre, cereal flaking unit, dhal mill, oil mill, roller flour mill, fruit and vegetable grading centres/processing complex/dehydration unit, centrallised cold store, n-triacontanol unit, onion grading and storage complex, spice processing unit, animal feed plant, abbatoir, poultry dressing plant, etc.

SATARA

Present Status

The district Satara is between two developed districts like Pune, Kolhapur. Industrial development is very poor in this district except coming up of sugar factories in cooperative sector. There is a good basic infrastructure and communication facilities and cheap labour. The status of existing industrial structure on agro-based is not progressive. However, few industries such as roller flour mill, bakery, oil mills (expeller), spice industries are present. One meat processing unit is located at Koregaon in the district.



Scope

There is a scope to set up the following food based units in the district : Primary grain processing and disinfestation centre, cereal flaking unit, dal mill, oil mill, n-triacontanol unit, fruit and vegetable grading centres/processing complex/dehydration unit, centralised cold store, onion grading and storage complex, spice processing unit, animal feed unit, etc.

PARBHANI

Present Status

Sugarcane being a major crop, there are 3 sugar factories in the district with 1250 MT crushing capacity per day each. These are located at Basmath, Pathri and Kalamhuri. Oil mills, dal mills are the major food-based industries located in the district.

Scope

There is a scope to set up the following food based units in the district : Primary grain processing and disinfestation centre, cereal flaking unit, dal mill, energy food unit, hard boiled confectionery unit, roller flour mill, fruit and vegetable grading centres/processing complex/ centralised cold store, etc.

GADCHIROLI

Present Status

Gadchiroli is a zero industry district in Maharashtra. There is no large scale industry functioning in the district. In

small scale sector, less than 100 units are registered under agro-based category mainly on poha mills, oil mills, spice powders.

Scope

Due to lack of infrastructural facilities, there is not much scope to start new food industries on large scale. However, there is a scope to start few units such as rice mill, poha mill, oil mill, primary grain processing and disinfestation centre, mahua alcohol plant, etc.

WARDHA

Present Status

Wardha district is industrially backward as compared to the other districts of Vidharbha region. There are two large/medium oil industries, roller flour mills and few SSI units are working mainly based on dhal, oil, bakery, spice powders, papad and extruded products.

Scope

The infrastructural facilities present in this district will give a lot of scope to start new industries. Based on the resources available, primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre and one centrellised cold store will have scope in this district.

KOLHAPUR

Present Status

Kolhapur is known for the industrialization. Good number of large and medium scale industries are working in this district,

which include a dairy unit producing SMP, Srikhand, roller flour mills. Some oil mills are located in Gadhinglaj, Vadgaon, Jaysingpur, Ichalkaranji and Kolhapur. The infrastructural facilities are very good to start new industry.

Scope

The following few industries are suggested based on resources and demand: primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre and one centrallised cold store, infant food plant, n-triacontanol unit, rice mill, spice processing unit, animalfeed plant, etc.

RATNAGIRI

Present Status

Ratnagiri district does not have good transport and communication network. Due to industrial infrastructural facilities some large, medium and small scale units have come up. In large scale operations, one bakers yeast and yeast extract and in medium scale operation, processing of shrimps are working in this district. Apart from these, there are 288 SSI units which were registered mainly based on fruit and veg. and fish processing. Mango processing units are located mainly at Ratnagiri and Chiplun. Cashewnut processing units are in Ratnagiri taluka. Export-oriented mango pickle unit is located near Rajapur.

Scope

Based on the resources, the following industries may have good scope : primary grain processing and disinfestation centre, rice milling, fruit and veg. grading centre/processing complex, cold store, desiccated coconut unit, kokum/tamarind concentrate/powder plant, cashewnut processing unit, cashewapple liquor plant, animalfeed unit.

SOLAPUR

Present Status

Except sugar factories no other large and medium scale industry on agro-base exists. There are quite a good number of SSI units registered with DIC mainly on oil, dhal.

Scope

Some fruit growers' associations are successfully sending packed fresh fruits (grapes, ber, pomegranate) all over the country. Following food based industries have a scope in the district : primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre/processing complex/dehydration unit, cold store, spice processing unit, abattoir, poultry dressing plant, animalfeed plant, roller flour mill, hard boiled sugar confectionery unit, etc.

NASIK

Present Status

Nasik district has made rapid stride in development of industry. Major medium and small scale industry have come in a

big way in last few years. Almost all food based small scale units manufacturing diversified products like high tech, RTE processed foods, processed fruit & veg. products, bread and biscuit, so chocolate and sugar confectionery products; roller flour mills, 100% export oriented sparkling grape wine factory unorganised grape dehydration units, pulse, oil and bhagar mills; soft drink concentrate plant, soft drink bottling units.

Scope

There is immense potential for agro-based industry. Presently, it is not being finally harnessed. Following food based industries can be set up in the district : primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre/processing complex/dehydration unit, cold store, onion grading and storage complex, spice processing unit, animalfeed plant, abattoir, poultry dressing plant, roller flour mill, etc.

JALGAON

Present Status

Jalgaon district is an advanced district in respect of education, good infrastructural facilities are available in the district for SSI, medium and large scale units. There are 267 registered SSI units under food processing. The main products manufactured by these units are edible oil, non-edible oil, cattlefeed, poultry feed, confectionery, bread, dhals, biscuit, spice powders, papain, pectin, milled wheat products processed fruits and vegetable products. Papain unit located in the district claims to meet the 15-20% of the global demand with export

turnover of over 1 crore. Few large and medium scale industries are present such as milk processing and milk under vanaspati and refined oil; edible oil cake and fruit, veg. canning unit.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre, cold store, banana processing complexes, n-triacontanol unit, spice processing unit, animalfeed plant, etc.

CHANDRAPUR

Present Status

Inspite of vast resources of minerals, forest, water and agriculture, the district has no influential images on the industrial map of the State as yet. There is one medium scale industry producing veg. oils and no other agro-based large industries in this district. There are few agro-based SSI units mostly oil mills, rice mills, dhal mills and spice powders.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, oil mill, rice mill, cereal flakes, dhal milling, spice processing unit, animalfeed plant, etc.

PUNE

Present Status

Pune is one of the well-developed district with respect to

industrialization in Maharashtra. This district has very good infrastructural, transport and communication facilities. There are a few food-based units mainly on fruit & vegetables processing, soft drinks bottling, roller flour mills, bakery units, confectionery and convenience foods plant, poultry processing unit.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre/processing complex/dehydration unit, cold store, animal feed plant, abattoir plant, etc.

SANGLI

Present Status

There are two flour mills and one aseptic packaging of mango and tomato products under large/medium scale sector. Considerable SSI units are registered with DIC mainly on bread and bakery, oil mills, dhal mills ;and spice powder.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, fruit and veg. grading centre/dehydration, energy food unit, cold store, spice processing unit (specially turmeric), poultry dressing plant, animal feed plant, etc.

JALNA

Present Status

Jalna district has good transport and communication network. As Group-D cadre this district have attractive incentives and infrastructural facilities. The SSI industries are mainly dhal mills, oil mills, bakery, confectionery, soft drinks and spice powders.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, cereal flakes, dhal milling, n-triacontanol unit, animalfeed plant, etc.

AMARAVATI

Present Status

Industrialization in Amaravati is now picking up due to its infrastructural facilities which are essential to start new industries. There are 119 registered SSI units mainly oil mills, dhal mills, etc. There are oil mills at Amravati, Achalpur, Chandur, Mozari and Dattapur-Dhamangaon in the district. Dhal mills are located at Amravati, Badnera and Dattapur-Dhamangaon.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, oil mill, cereal flakes, dhal milling, roller flour mill, animalfeed plant, spice processing unit, energy food plant, fruit and veg. grading centre/processing complex/dehydration unit, etc.

AKOLA

Present Status

This district has very good infrastructural transport and communication facilities to start new industry. In medium scale there are 2 oil mills, one P.E. bags producing mill, 1 sugar factory. There are no large scale units under agro-based SSI industries are registered mainly on oil mill, flour mill, dhal mill, spice powder, bakery and confectionery.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, cereal flakes, fruit & veg. grading centre/processing complexes, cold storage, dhal milling, poultry dressing plant, animal feed plant, banana processing complex, etc.

THANE

Present Status

Thane is a very peculiar district with respect to socio-economic conditions. The north part of Thane is known to tribal area and the south part is influenced by Bombay. Being twin city of Bombay, the industrial development in Thane has been rapid. There are considerable food based units in the district like rice mills, bakeries, chocolate plant, fruit and vegetable processing, meat and fish processing, cold storage, etc.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre,

cereal flakes, animalfeed plant, fruit and veg. grading centre/processing complex, desiccated coconut unit, poultry dressing plant, cold store, etc.

RAIGAD

Present Status

Considerable food based SSI units are registered mainly on rice mills, roller flour mills, coconut processing, fish processing, snack food units, bakery units, animal feed plant, RTS beverage plant, etc.

Scope

Following food based industries can be set up in the district : primary grain processing and disinfestation centre, cold store, animalfeed plant, energy food plant, desiccated coconut unit, etc.

GREATER BOMBAY

Present Status

Bombay called the home of industries is one of the most industrially developed cities in the country. There are large number of industries from artisan level to large scale in various fields, scattered all over the district. Many food based industries like roller flour mills, bakery plants, confectionery units, soft drinks plants, oil mills, ice cream plants, fruit and vegetable processing units, abattoirs, meat and fish processing units, infant and weaning food plants, egg processing plant, etc. are there in the district.

Scope

Greater Bombay is the most advanced district in industrialisation in the State. Also the population of Greater Bombay is exploding. Considering these two critical factors, State Govt. prefers industrial promotion in districts other than Bombay. Hence no few food based industries are proposed in the district.

INDUSTRIAL STATUS (AGRO BASED) MAHARASHTRA

(IN NOS)

DISTRICTS	COLD STORAG	BAKERY	FLOUR MILL	DAL MILL	OIL MILL	SOFT DRINKS	CONF ECTION	FRUIT & VEG	DAIRY INDUS	MEAT & FISH POULTR;PROCG	SPICE INDUS	ANIMAL FEED	RICE MILL	STARCH INDUS	
1 BHANDARA	3	10	2	1	27		6				1	6	659	2	
2 CHANDRAPUR		3		4	42	2	2		1		9	1	170		
3 GADCHIROLI		2			3	8	1				6		130		
4 NAGPUR	4	94	2	120	16	5	7	12	4		19	16	36		
5 WARDHA	1	9	2	13	38	1	1	1	2		6	1			
6 AKOLA	1	11	1	45	99	1	7		3		5				
7 AMRAVATI	2	4		3	47	1	5	1	4		1	2			
8 BULDHANA									3						
9 YEOTMAL	1	5	1	10	50	10	4		4		18	1	5		
10 AURANGABAD	2	3	2	35	336	2	5	1	4	1					
11 BEED		5		3	41		2		4			1	59		
12 LATUR		11		30	151	2	3	15	4	2	40		7		
13 JALNA	1	120		86	20	10	15	15	1		100		1		
14 NANDED	1	11	1	20	71	20			2	1					
15 PARBHANI				40	74				3			2	26		
16 USMANABAD	1	21		11	48	4	6		3		30		11		
17 AHMADNAGAR		26	1	3	23	5	10	3	2		12		55		
18 DHULE		10		13	36		7	4	2		26	6		1	
19 JALGAON	2	6	3	40	44	1	2	20	5		25	2			
20 NASIK	2	14	2	6	15	4	15	105	4		25	1			
21 KOLHAPUR	2	50	8	4	16	30	4	29	3		3				
22 SANGLI		24	2	3	10	6	7	9	4		10				
23 SATARA	2	35	3	1	26	5	1	3	10	1	88	4			
24 SOLAPUR	1	3			82		4		1			1			
25 PUNE	12						1	57							
26 THANE	5	14			3	16	2	37		2	12				
27 RAIGAD		6	18		1	8	2					1	26		
28 RATNAGIRI	14		1				5	58	5		16	12			
29 SINDHODURG		1			1			22	2						
30 GR BOMBAY	76														
MAHARASHTRA	133	548	49	491	1320	141	124	391	80	7	28	424	57	1185	3

Note: Blank space indicates data not available.

Identified Industries
and Location

IDENTIFIED FOOD BASED INDUSTRIES AND THEIR LOCATIONS IN MAHARASHTRA

1. Rice Mill (Capacity 96 TDD)

Bhandara (Bhandara, Gondia, Tumsar), Gadchiroli (Armori), Chandrapur (Chandrapur, Nagbhid), Nagpur (Mahuda), Thane (Vasai), Ratnagiri (Dapodi, Rajapur), Raigad (Panvel, Roha), Kolhapur, Sindhudurg (Kudal, Sawantwadi) - 15

2. Cereal Flakes (5 T Paddy/Day)

Bhandara (Bhandara, Tumsar, Gondia), Chandrapur (Warda, Sindewahi), Gadchiroli (Aheri), Nagpur, Wardha, Akola (Mustijapur), Amraoti, Buldhana (Khamgaon), Aurangabad, Beed (Parli Vajnath), Latur, Jalna, Nanded, Parbhani, Usmanabad, Ahmednagar, Dhule, Jalgaon, Nasik (Malegaon), Kolhapur, Sangli, Satara (Patan), Solapur, Pune (Shirur), Thane (Vasai), Raigad (Pen, Roha) - 30

3. Primary Grain Processing Centres

Bhandara (Bhandara, Tumsar, Gondia), Chandrapur (Warda, Sindewahi), Gadchiroli (Aheri, Armori), Nagpur (Nagpur, Katol, Savner, Umred), Wardha (Wardha, Hinganghat, Pulgaon), Akola (Akola, Washim, Mustijapur, Karanja), Amraoti (Amraoti, Achalpur, Chandurbazar), Buldhana (Mehkar, Chikhali, Khamgaon, Malkapur, Nandura), Yeotmal (Yeotmal, Pusad, Vani, Umarkhed), Aurangabad (Aurangabad, Sillod, Paithan, Kannad), Beed (Beed, Majalgaon, Amjojogai, Parli-Vaijnath), Latur (Latur, Nilanga, Udgir, Ausa), Jalna, Nanded (Nanded, Loha, Dharmabad, Deglur, Kandhar), Parbhani (Parbhani, Sailu, Manvat, Hingoli,

Jintur), Usmanabad (Usmanabad, Bhoom, Kalamb, Murum, Tuljapur), Ahmednagar (Ahmednagar, Srirampur, Rahri, Sangamner, Jamkhed, Shevgaon, Kopargaon), Dhule (Dhule, Shirpur, Nandurbar, Dondaiche, Shahada), Jalgaon (Jalgaon, Bhusaval, Amalner, Chopda, Parola, Jamner, Chalisgaon, Pachora), Nasik (Nasik, Malegaon, Nandgaon, Yeola), Kolhapur (Kolhapur, Vadgaonpeth, Jaisingpur, Gadhingly)1, Sangli (Sangli, Islampur, Atpadi (Tasagaon), Satara (Satar, Phaltan, Karad), Solapur (Solapur, Barshi, Akkalkot), Pune (Pune, Baramati, Indapur), Thane (Shahapur), Raigad (Pen, Panvel), Ratnagiri, Sindhudurg (Kudal) - 108

4. Disinfestation Centre

As in Sl.No. 3 - 108

5. Pulse Processing Unit (1 T/hr, 16 T/day)

Bhandara (Gondia), Chandrapur (Warora), Nagpur (Savner), Wardha (Pulgaon), Akola (Akola, Mustijapur, Karanja), Amraoti (Amraoti, Achalpur, Chandurbazar), Buldhana (Khamgaon), Yeotmal (Pusad), Aurangabad, Beed (Majalgaon), Latur, Jalna (2), Nanded, Parbhani, Usmanabad (Kalamb), Ahmednagar, Dhule (Dhule, Nandurbar, Taloda) Jalgaon (Jalgaon, Amalner, Edlabad), Nasik (Dindori, Malegaon), Kolhapur, Sangli (Khanapur), Satara (Karad), Solapur (Barshi), Pune (Baramati) - 34

6. Oil Mill (6 T/Day)

Chandrapur (Warora), Nagpur (Nagpur, Narkhed), Wardha (Hinganghat), Amraoti, Yeotmal, Beed, Latur, Ahmednagar, Nasik (Yeola), Jalgaon (Jalgaon, Amalner), Sangli (Islampur), Satara (Karad), Solapur (Akkalkot), Kolhapur (Ichalkarnji, Gadhinglaj) - 17

7. Energy Food (6 T/Day)

Bhandara (Gondia), Amraoti, Parbhani, Dhule, Sangli, Raigad - 6

8. Sugar and Confectionery (20 T/Day)

Parbhani, Solapur - 2

9. n-Triacontanol (20 g/Day)

Ahmednagar, Jalna, Kolhapur, Latur, Satara, Jalgaon - 6

10. Fruit and Vegetable Grading Centres (100 T Cap.)

Bhanadara (Gondia), Nagpur (Nagpur, Narkhed, Mauda, Katol), Wardha, Akola, Amraoti (Amraoti, Achalpur, Warud), Buldhana (Chikhali, Mehkar, Shegaon), Yeotmal, Aurangabad (Aurangabad, Paithan, Vaijapur, Sillod, Kannad), Beed, Latur, Jalna, Nanded, Parbhani (Hingoli, Jintur, Pathri, Gangakhed, Parbhani), Usmanabad, Ahmednagar (Kopergaon, Sangamner, Srirampur, Rahuri, Srigonda, Shevgaon, Ahmednagar), Dhule (Dhule, Ner-Dhule, Dahivel-Sakri, Nandurbar, Shindkhede, Shahada), Jalgaon (Bhusawal, Erandol, Jalgaon, Chalisgaon, Raver, Yawal), Nasik (Pimpalgaon-Baswant, Lasalgaon, Niphad, Sinner,

Nasik, Malegaon, Yeola, Kalwan), Kolhapur (Kolhapur, Panhala), Sangli (Tasgaon, Atpadi, Walve, Miraj, Kavthemahal, Sangli), Satara (Dahivadi, Vaduj, Karad, Phaltan, Satara, Wai), Solapur (Solapur, Sangola, Malsiras, Madhe, Karmale, Pandharpur), Pune (Junnar, Ambegaon, Pune Indapur, Bhore, Baramati), Thane (Dahanu, Palghar), Ratnagiri (Dapoli, Ratnagiri), Sindhudurg (Kudal, Savantwadi, Vengurla), Raigad (Roha) - 90

11. Cold Storage (1000 T Capacity)

Bhandara (Gondia), Nagpur, Wardha, Akola, Amraoti, Buldhana (Chikhali), Yeotmal, Parbhani, Aurangabad, Latur, Ahmednagar, Dhule, Jalgaon, Nasik, Kolhapur, Sangli, Satara, Solapur, Pune, Thane (Dahanu), Sindhudurg (Kudal), Raigad (Alibag), Ratnagiri (Ratnagiri, Chiplun), Sindhudurg (Vengurla) - 24

12. Fruit and Vegetable Processing

Nagpur, Buldhana (Chikhali), Aurangabad Nanded, Parbhani, Latur, Ahmednagar (Srigonda), Dhule (Sakri), Nasik (Sinnar, Niphad), Solapur (Sangola), Satara (Phattan), Pune (Baramati), Thane (Dahanu), Ratnagiri (Chiplun), Sindhudurg (Savantwadi) - 15

13. Banana Processing Complex (10 TDD)

Jalgaon (Yawal, Jalgaon), Naded, Akola - 4

14. Fruit and Vegetable Dehydration (5 T/Day)

Amraoti, Beed, Latur, Aurangabad, Nanded (Biloli),
 Ahmednagar (Rahuri), Dhule (Sakri), Nasik (Nasik, Niphad,
 Dindori, Satana, Chandvad, Yeola, Ozar), Sangli (Sangli,
 Miraj, Tasgaon, Kavthemahal), Satara (Phaltan), Solapur
 (Solapur, Akkalkot, Barshi, Pandharpur, Sangola, Malsiras)
 Pune (Indapur, Junnar), Thane (Dahanu) - 28

15. Onion Grading and Storage Complex

Buldhana (Jalgaon Jamod), Ahmednagar (Kopergaon,
 Sangamner), Dhule, Nasik (Lasalgaon, Pimpalgaon-Basavant,
 Nipha, Nasik, Manmad, Satana, Malegaon, Sinner, Yeola,
 Kalwan, Chandivad, Dindori), Satara (Lonand, Phaltan,
 Dahivadi) - 20

16. Spice Processing Unit (5 T/Day)

Nagpur (Umred), Chandrapur, Amraoti (Achalpur), Nanded,
 Usmanabad, Ahmednagar, Dhule (Dondaiche - Sindkheda),
 Jalgaon (Amalner), Dhule (Dondaiche), Nasik, Sangli
 (Tasgaon), Satara, Solapur (Akkalkot), Kolhapur
 (Gadhinglaj) - 13

17. Desiccated Coconut

Ratnagiri (Dapoli), Sindhudurg (Vengurla), Raigad
 (Alibag), Thane (Palghar) - 4

18. Tamarind/Kokum Products - Concentrate & Powder

Sindhudurg (Kudal), Ratnagiri (Ganapatipule) - 2

19. Cashewnut Processing

Ratnagiri (Rajapur), Sindhudurg (Malvan, Kankavali) - 3

20. Cashewapple Processing

Ratnagiri, Sindhudurg (Sawantwadi) - 2

21. Animal Abbatoir and Meat Packing Unit

Nagpur, Nasik, Solapur, Pune, Ahmednagar - 5

22. Poultry Dressing Plant

Nagpur, Akola, Ahmednagar, Nasik, Sangli, Solapur, Thane
(Bhivandi) - 7

23. Cattlefeed/Fish meal/Fish feed Plant (40 T/Day)

Bhandara, Chandrapur, Nagpur, Akola, Yeotmal, Latur,
Nanded, Jalna, Parbhani, Aurangabad, Ahmednagar, Dhule,
Jalgaon (Amalner), Nasik (Yeola, Nasik), Kolhapur
(Islampur, Sangli), Satara (Karad), Solapur, Pune
(Baramati), Thane (Vasai), Raigad (Alibag), Ratnagiri
(Ganapatipule, Sindhudurg (Vengurla) - 24

24. Roller Flour Mill

Amraoti, Parbhani, Ahmednagar, Solapur, Nasik - 5

25. Mahua Alcohol

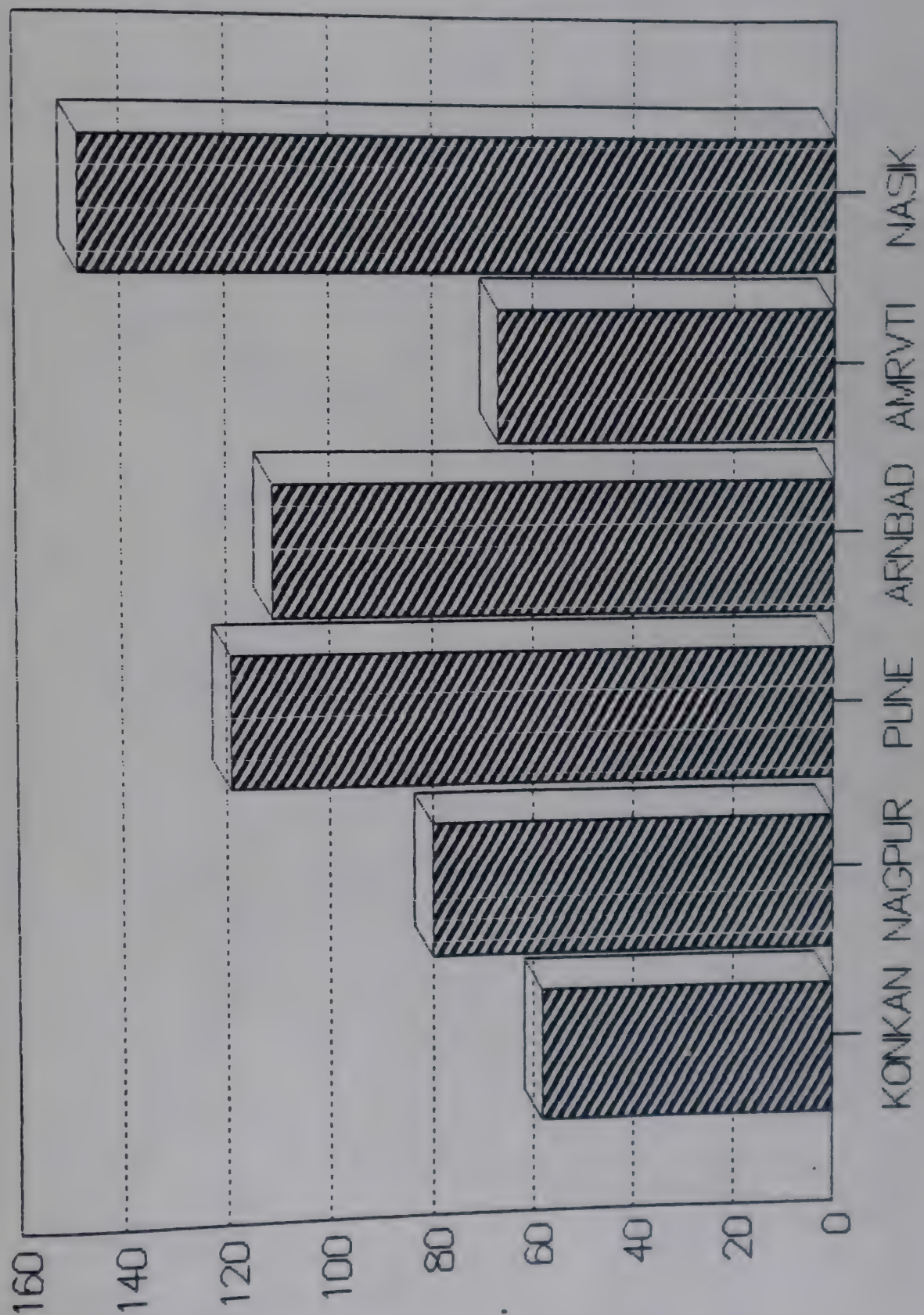
Gadchiroli, Dhule (Akkalkua) - 2

26. Infant Food

Kolhapur (Warna) - 1

27. Aseptic packaging of tomato and fruit juice concentrate:
Nagpur, Nashik - 2
28. Edible groundnut flour
Dhule -1
29. Coconut oil mill
Ratnagiri (Dapodi), Sindhudurg (Vengurla), Thane
(Palghar), Raigad (Alibag) - 4

in Maharashtra



Division



BHANDARA DISTRICT



CHANDRAPUR DISTRICT 103-M-III



GADCHIROLI DISTRICT



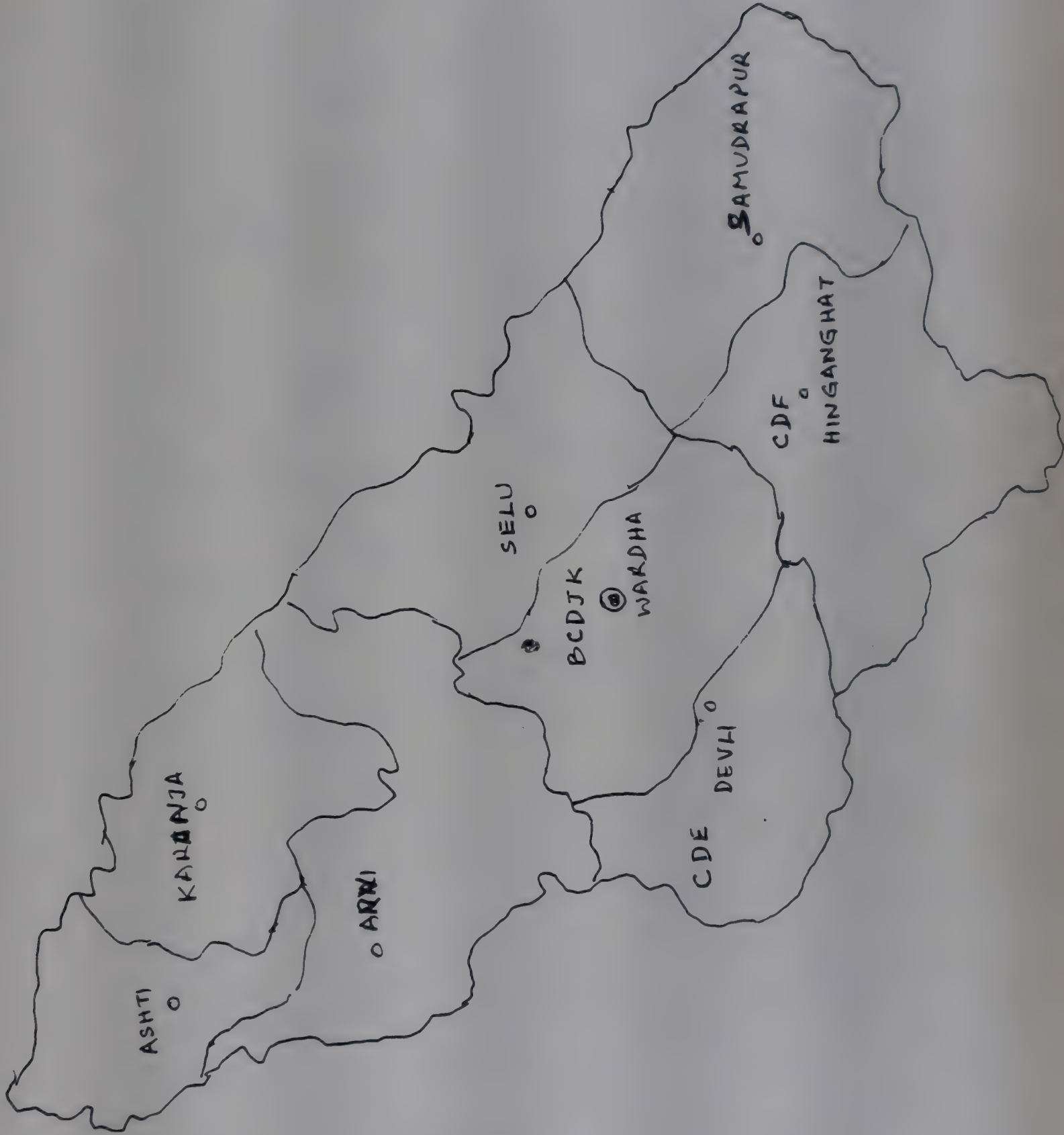
NAGPUR DISTRICT.

103-M-V



WARDHA DISTRICT.

103 - M - VJ

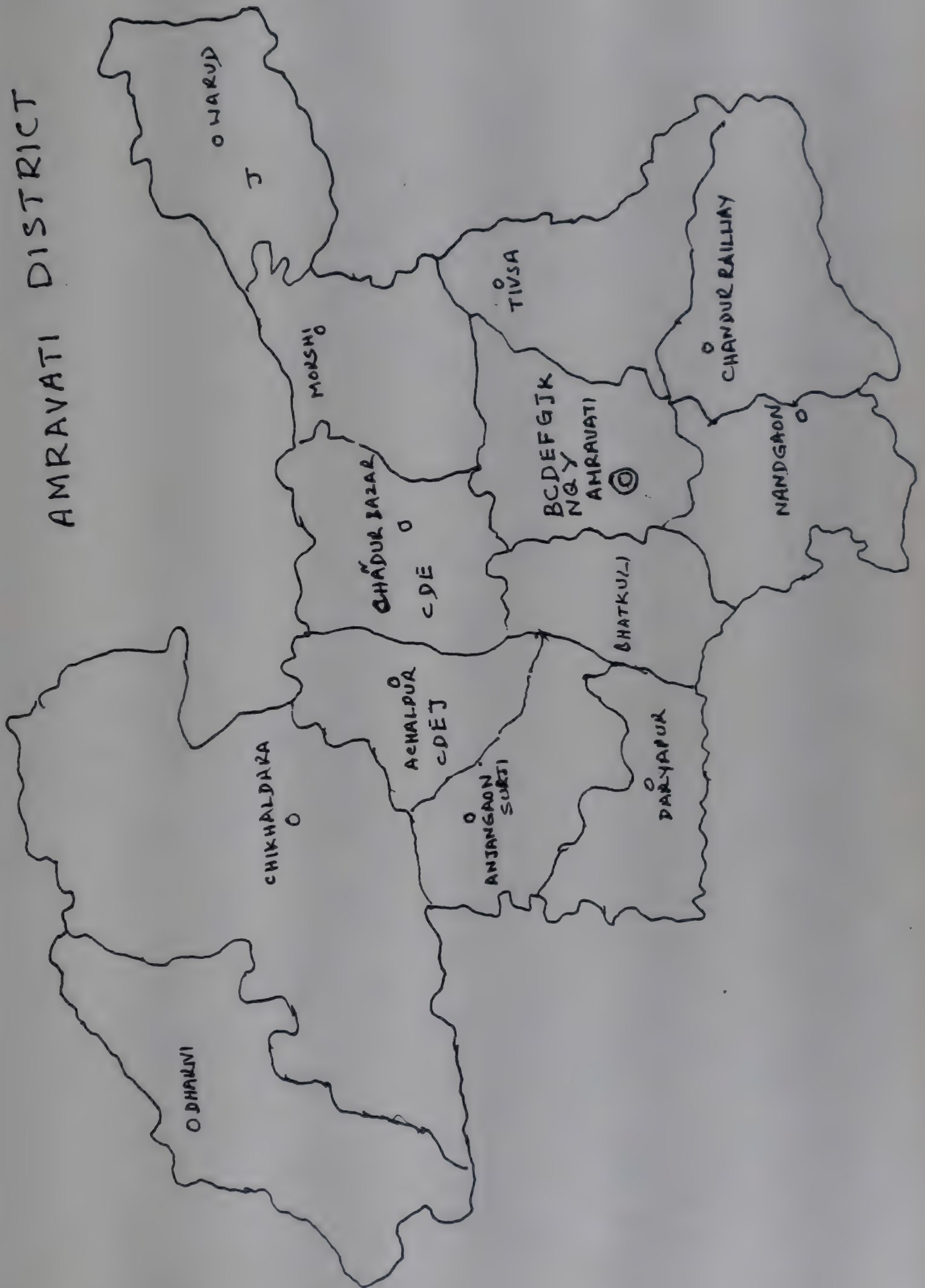


AKOLA DISTRICT

103-M-VII

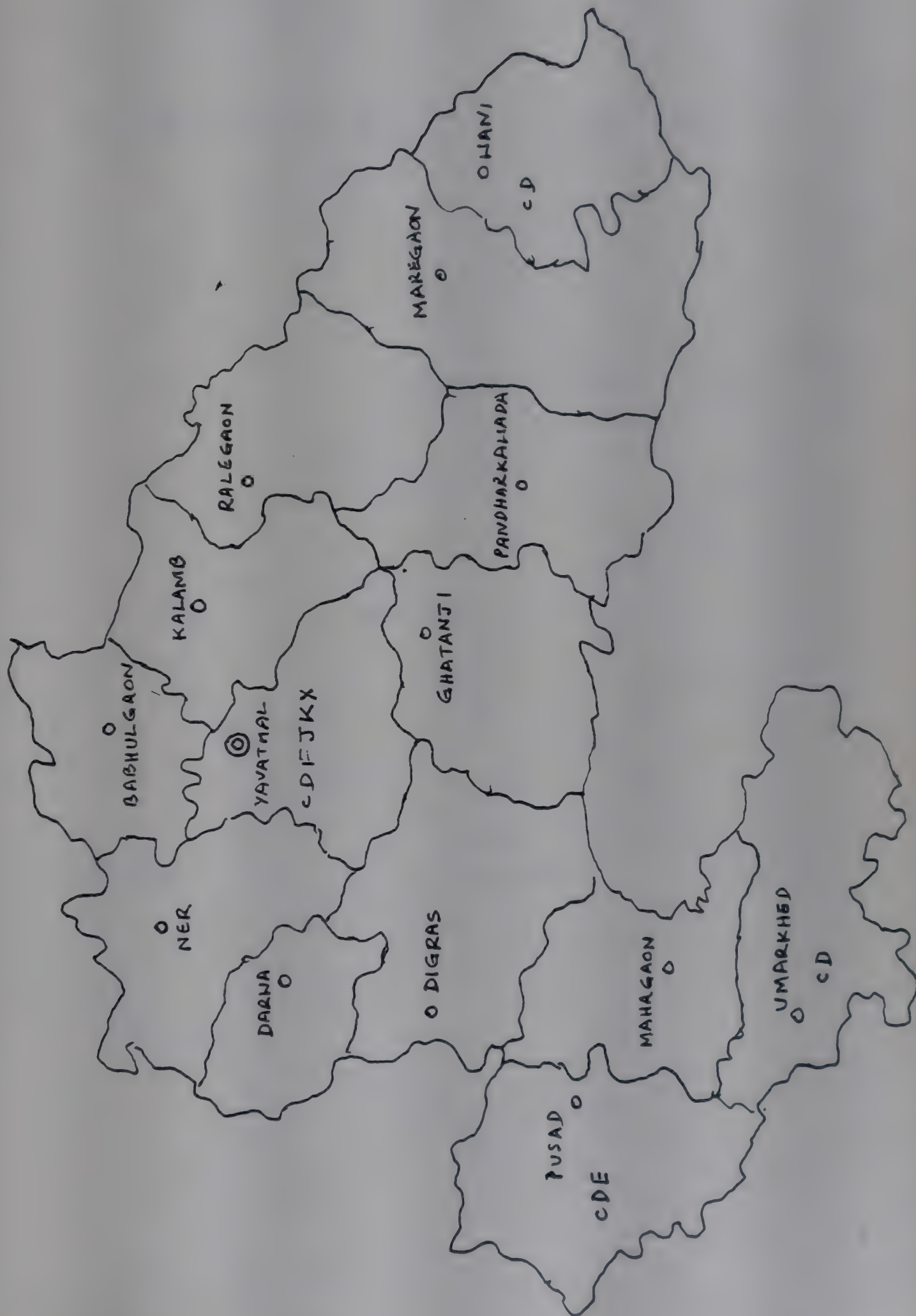


AMRAVATI DISTRICT



YAVATMAL DISTRICT

103-m-ix



AURANGABAD DISTRICT



BEED DISTRICT



LATUR DISTRICT





JALNA DISTRICT

NANDED DISTRICT

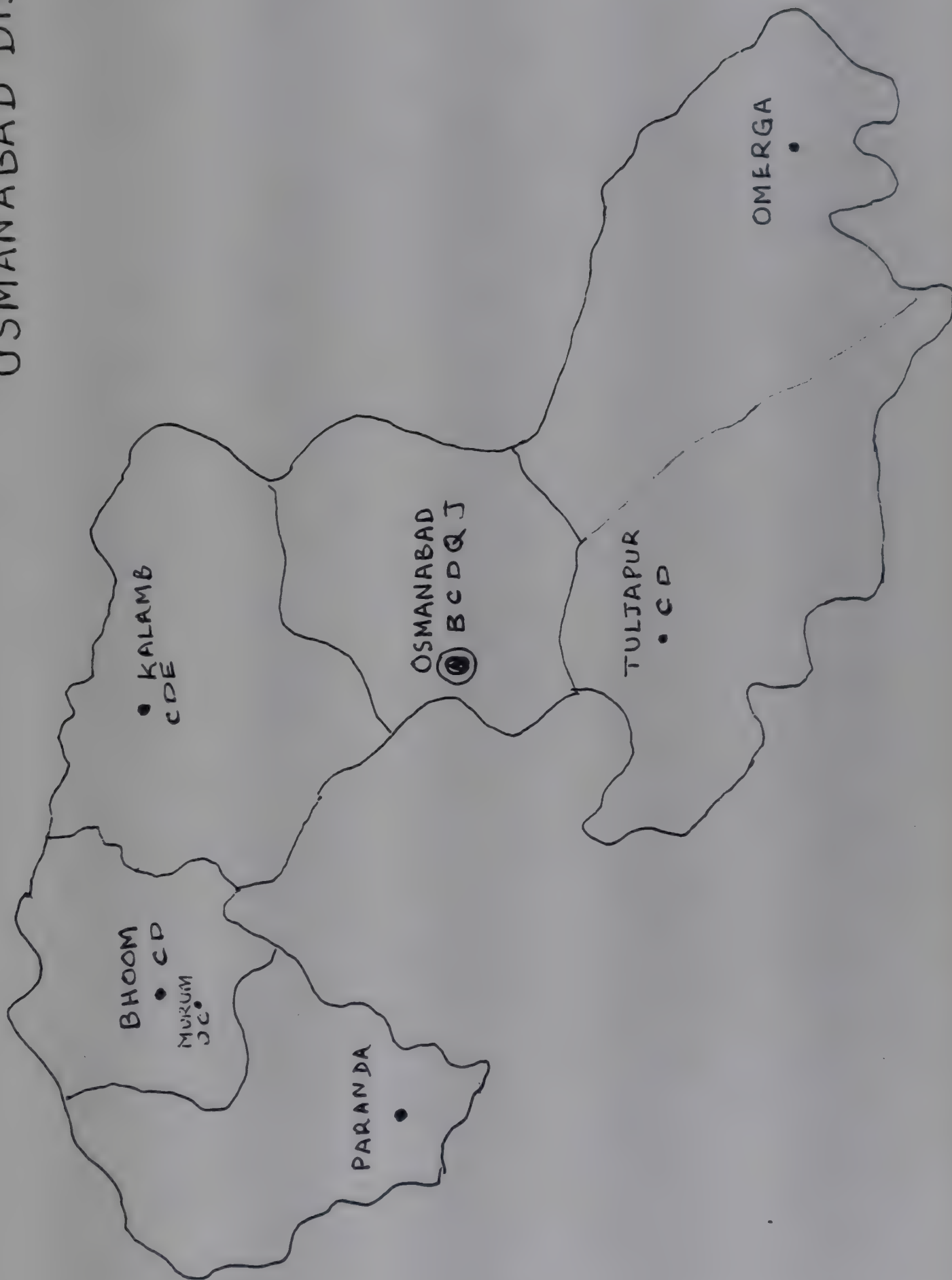
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PARBHANI DISTRICT

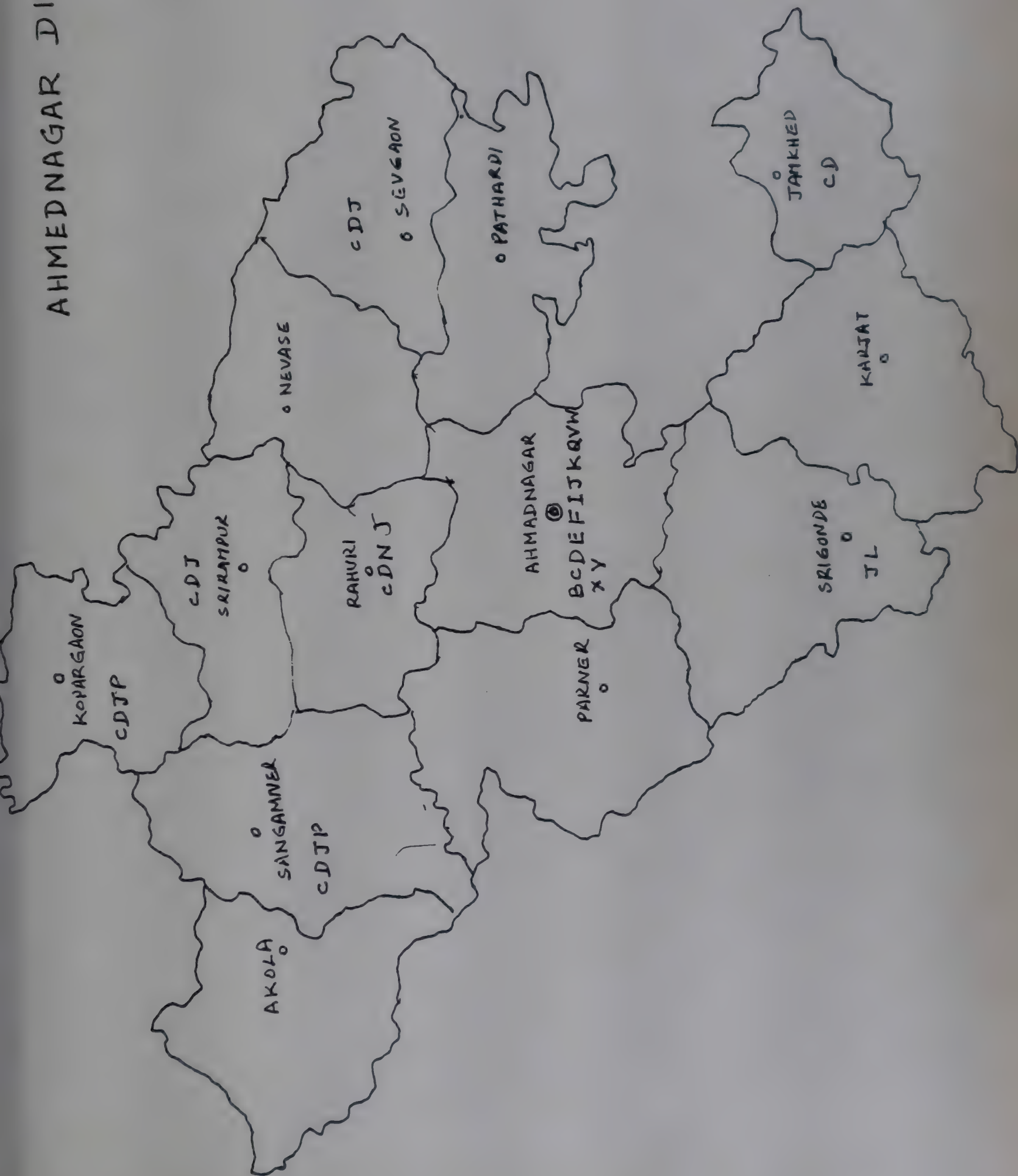


OSMANABAD DISTRICT

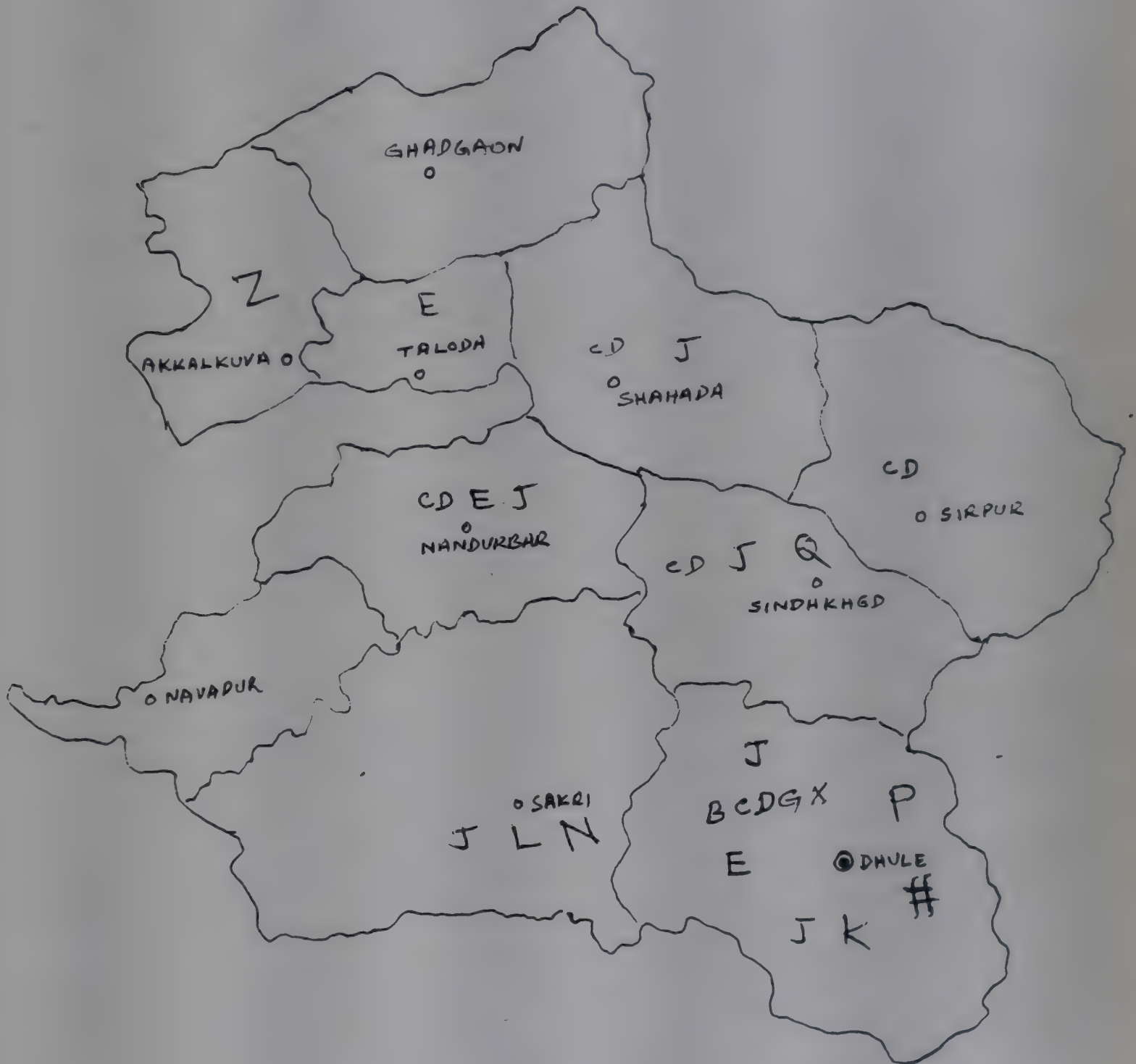


AHMEDNAGAR DISTRICT

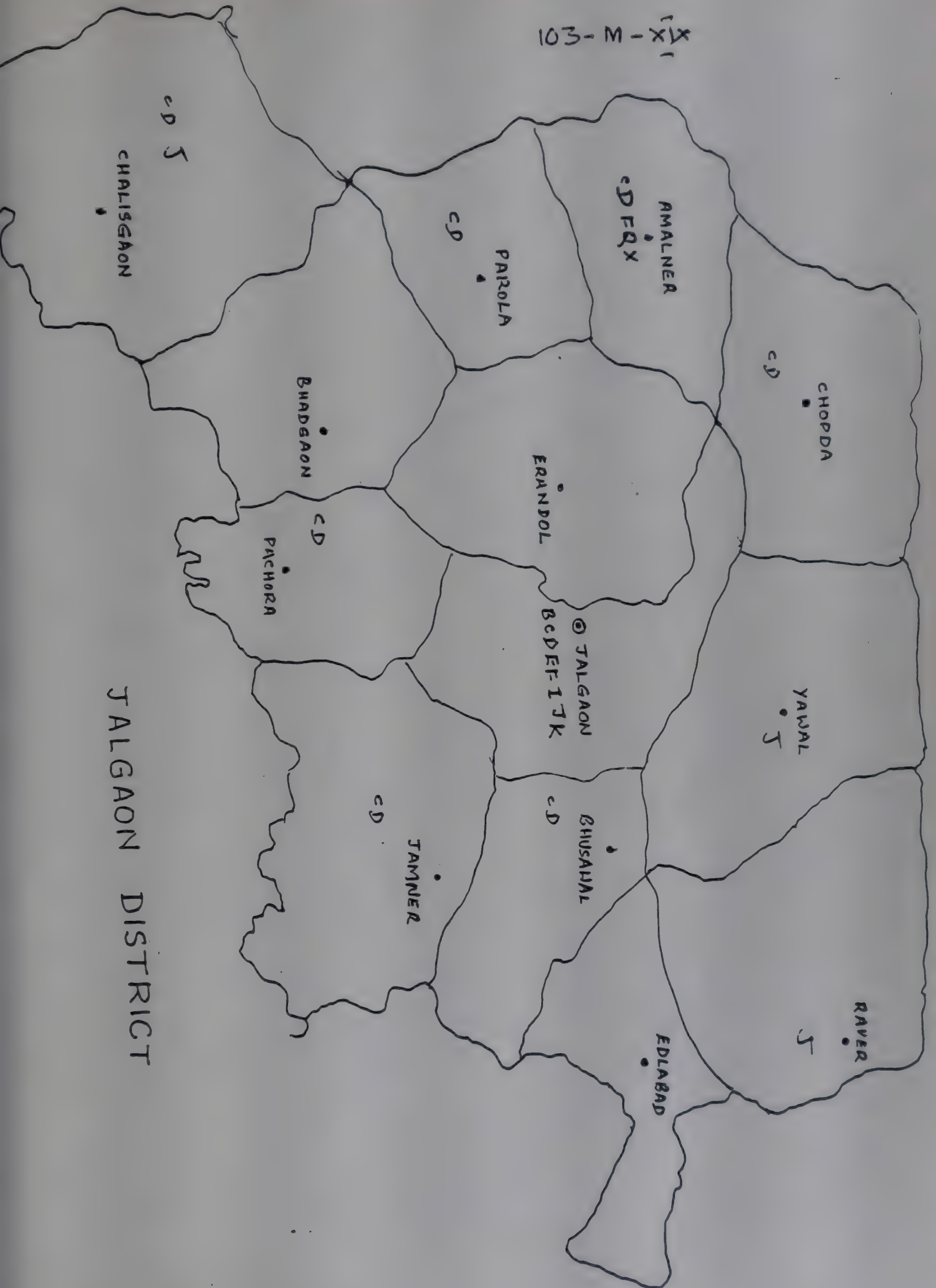
IC 3-m -XVII



DHULE DISTRICT



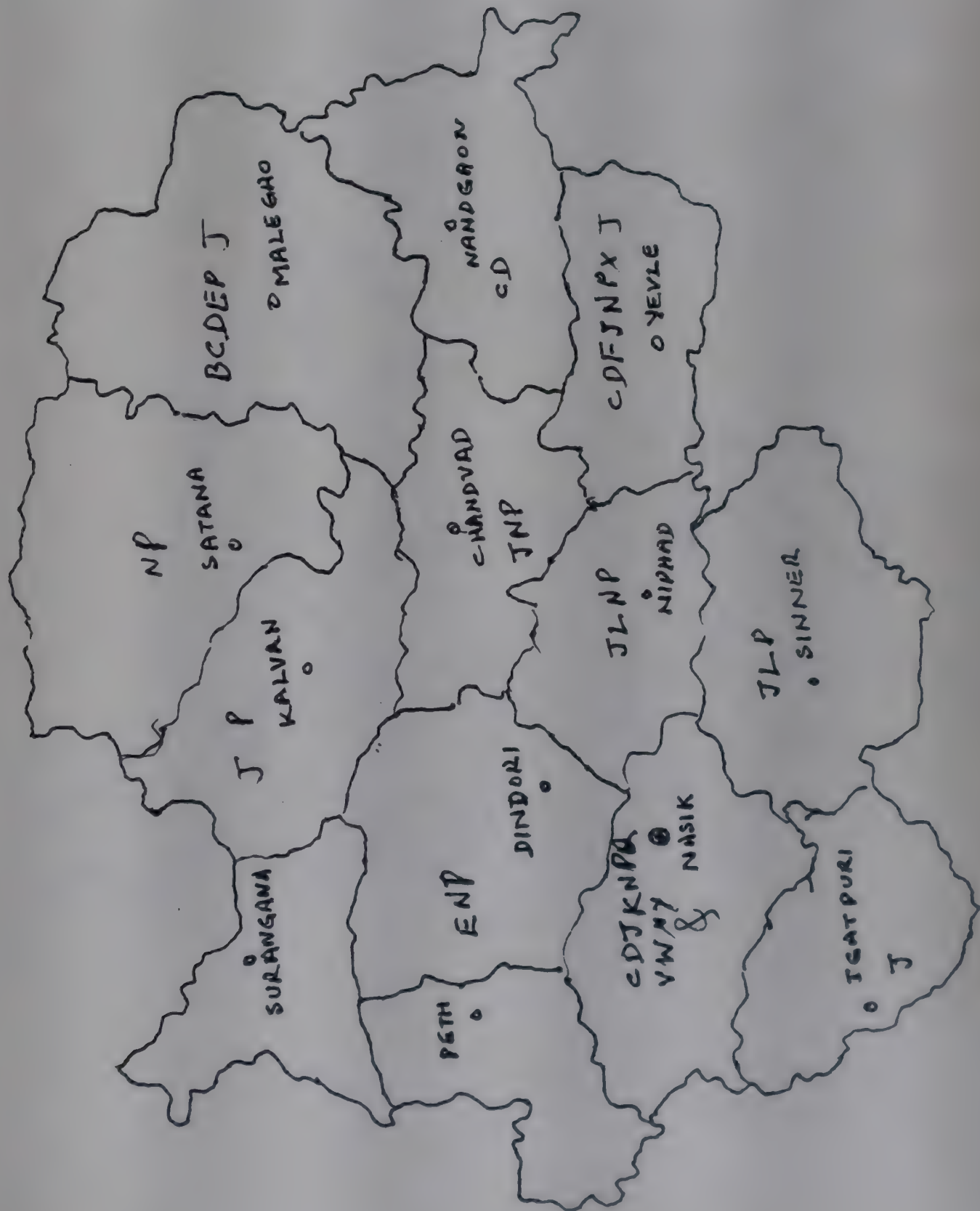
103-M-X¹X¹



TALGAON DISTRICT

NASIK DISTRICT

103-m-XX



KOLHAPUR DISTRICT.

103-m-XXI



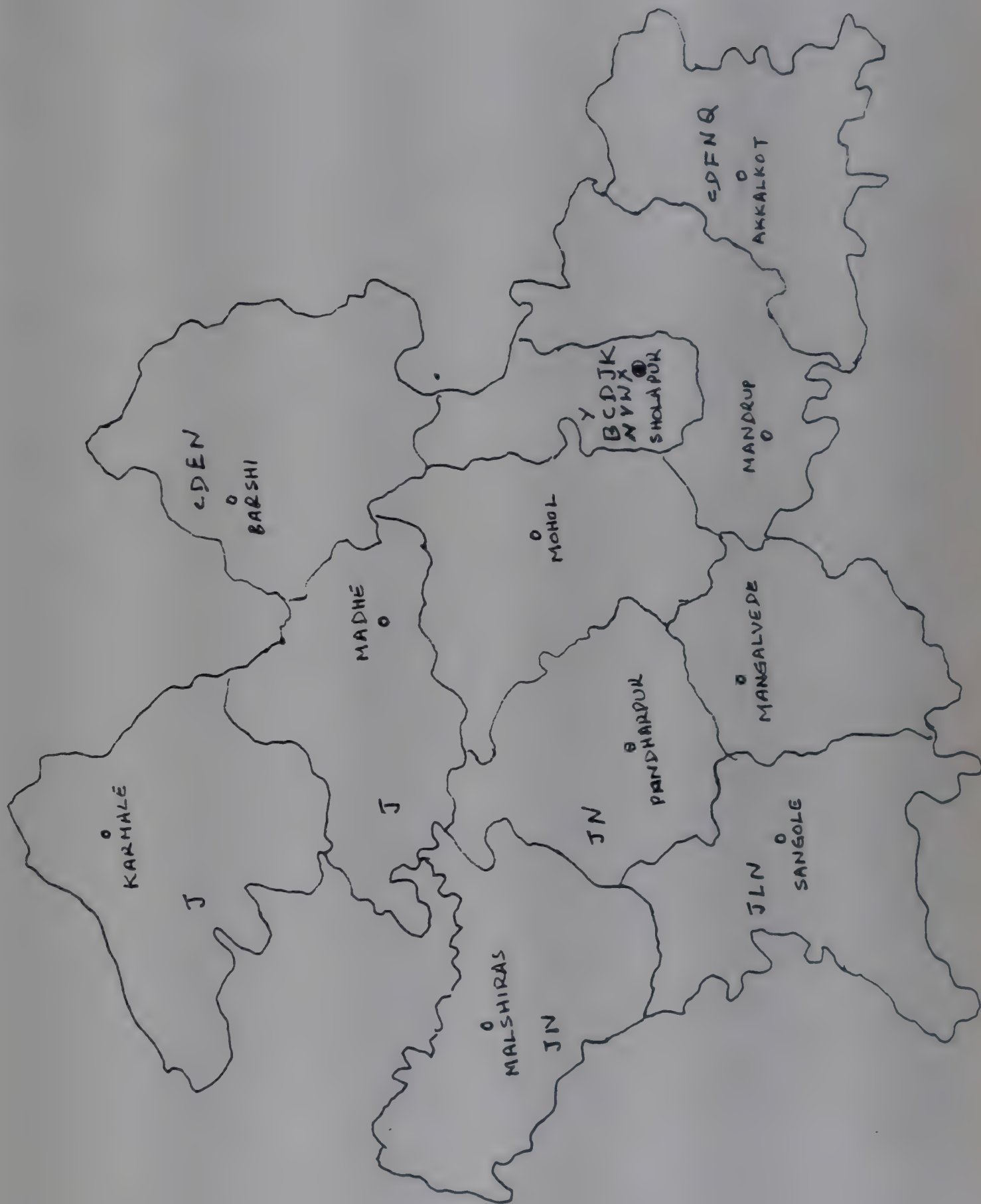
103-M-XXII

SANGLI DISTRICT



SHOLAPUR DISTRICT

103 - M - XXIV



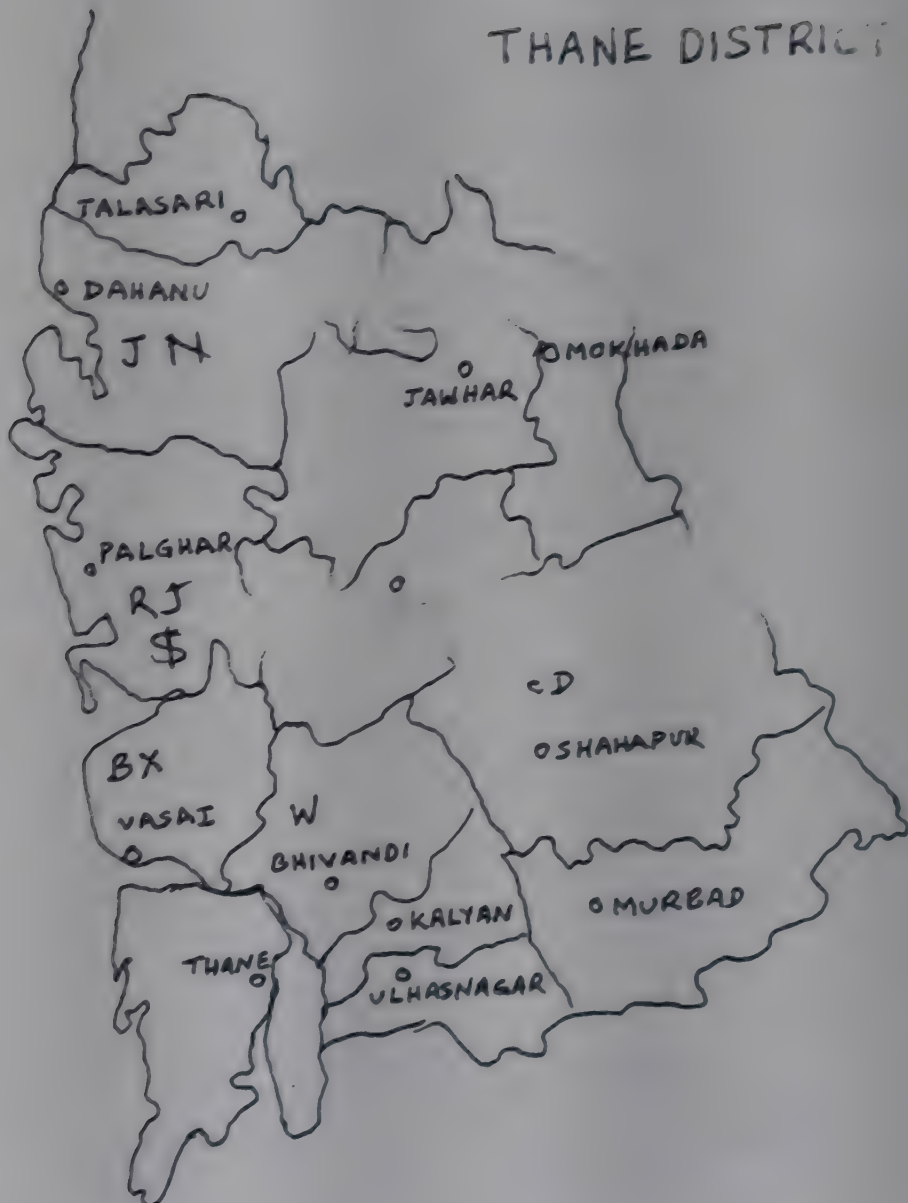
103-M-XXV



PUNE DISTRICT

22-XXII

THANE DISTRICT



103-M-XXVII

RAIGAD DISTRICT



RATNAGIRI DISTRICT



SINDHU DURG DISTRICT



Possibilities & Potentialities for Artisans/Small Scale food industries in Maharashtra

Raw material	Product/Process	Possible locations (Districts)
1	2	3
1. CEREAL BASED		
Paddy/Rice	- Parboiling modern - Modern milling	Raigad, Thane, Kolhapur, Bhandaram, Ratnagiri, Chandrapur, Sindhudurg
Rice bran	- Stabilisation	
Paddy straw	- Mushroom cultivation	Bhandara, Gadchiroli, Thane, Raigad, Sindhudurg
Wheat	- Bakery products (bread, biscuit) - Simple wheat milling for bakery flour	Pune, Nasik, Jalgaon Ahmednagar, Nasik, Nagpur, Aurangabad, Jalna, Solapur
Jowar	- Mini grain mill	Jalgaon, Buldhana, Sangli, Pune, Parbhani
Ragi	- Low cost weaning food	Kolhapur, Ratnagiri, Nasik, Raigad
2. PULSE BASED		
Tur/gram Urd, Mung	- Besan - Pulse dehusking (hand operated)	Akola, Amaravati, Parbhani, Latur, Nanded
3. OILSEED BASED		
Groundnut	- Oil milling - Edible groundnut flour - Aflatoxin decontamination of groundnut oil	Kolhapur, Pune, Satara, Sangli, Dhule Pune, Kolhapur Pune, Kolhapur
Sunflower	- Beneficiation of seed and Oil milling	Ahmednagar, Beed, Solapur, Osmanabad
Safflower	- Oil extraction	Parbhani, Jalna, Beed, Aurangabad, Ahmednagar
Sesame	- Dehulling and oil extraction	Nagpur, Amaravati

1	2	3
---	---	---

4. FRUIT & VEGETABLE BASED

Mango	- Pulp, juice, nectar, jam, fruit bars, Squash, RTS beverage, pickles and chutneys	Mango growing districts
Citrus	- Juice/squash, RTS, marmalade, pectin/citrus oil	Nagpur, Amaravati, Akola
Gauva	- Fruit bar, juice, pulp, slices (canned), jelly, RTS, fruit bar	Pune, Nasik
Papaya	- Papain, tutti-fruity, jam, pulp, fruit bar	Jalgaon, Nasik, Dhule, Pune
Banana	- Clarified juice, bar, jam, chips, wax emulsion treatment	Jalgaon, Nanded, Parbhani
Grapes	- Dehydrated grapes	Nasik, Sangli, Pune, Solapur, Ahmednagar, Satara
Pomogranate	- Juice, squashes, jellies	Ahmednagar, Osmanabad, Nasik, Pune
Sapota	- Dried and canned segments, pulp, mixed fruit jam	Thane
Onion	- Dehydrated onion flakes/powder	Nasik, Satara, Solapur, Dhule, Buldhana

5. PLANTATION CROPS/CASH CROPS/SPICES BASED

Chillies	- Sundrying, (dipsol treatment),	Nagpur, Amraoti, Wardha
Garlic	- Garlic powder	Pune, Solapur, Nasik
Turmeric	- Curing and polishing	Sangli, Osmanabad, Satara, Solapur and Kolhapur
Tamarind	- Tamarind powder	Solapur, Nanded
Coconut	- Desiccated coconut	Sindhudurg, Raigad
Sugarcane	- Bottling of sugarcane juice beverage	Kolhapur, Ahmednagar, Pune, Satara, Nasik, Sangli, Solapur
Ginger	- Fresh ginger product	Beed, Satara

1

2

3

6. FOREST PRODUCE BASED

Sal seed

- Sal fat

Chandrapur, Bhandara, Nagpur,
Gadchiroli, Jalgaon, Dhule,
Thane

Forest leaves

- Leaf cups/plates

7. LIVESTOCK/POULTRY BASED

Poultry dressing plants

Bombay, Pune, Nagpur, Nasik,
Ahmednagar, Amraoti, Solapur,
Kolhapur

8. OTHERS

Instant mixes

Nasik, Nagpur, Jalgaon,
Aurangabad, Solapur

Papad making

All Districts

Market &

Marketing

INDIAN FOOD INDUSTRY AND ALL INDIA MARKET OUTLOOK

The Government of India has recognised the need to encourage the processed food industry. Some major policy changes and several liberalisation measures for different segments of processed food manufacturing industries have been introduced with a view to promote its growth. These measures include withdrawal of ban on capacity creation, dereservation and broad banding of licences. Canned fruit and vegetable products, protein foods and processed fruit and vegetable based weaning foods are now exempted from licencing. Roller flour mills are allowed to grind over and above their licenced capacities. The ban on the creation of additional capacities for distilleries and alcoholic beverages has been lifted, thus promoting production of alcohol from non-molasses substrates. The importance of increasing the export

potential of the industry and modernising the industry by updating technology has been recognised. These helpful government policies, coupled with the incentives offered by various Governmental and financial agencies have led to a spurt in the industry with installation of a number of new plants utilising modern technology as well as by renovation of the older plants and machinery.

The food industry in India may be broadly categorised into three tiers, viz. the primary processing sector, the secondary sector and the tertiary. The primary sector comprises of the essential operations that are needed to make the farm produce consumable, for eg. paddy to rice, oilseed to oil and cake, sugarcane to cane sugar, wheat to flour, etc. The secondary sector may be considered to comprise of products derived from, or produced from products of primary sector, for eg. bakery products, confectionery, vanaspati, meat and fish products, canned fruits and vegetables, breakfast foods, dairy products including infant foods, starch and its derivatives, malt and malt products, etc. The tertiary sector may include speciality products made in combination or derived from products of secondary sector, such as ice cream, confectionery products, geriatric foods, etc.

Being basic necessity of life, primary processing had been established based on both indigenous and imported technologies. The growth of this sector has also been related to the growth in agricultural production. The growth of the secondary sector, has been nurtured by the growth in primary sector as well as the dictates of the trend in urbanisation, although restricted by many

a constraints. The tertiary sector had mostly faced restrictions and hence even presently contributes in little in volume and value addition as a percentage of the total for agro-sector.

It is said that the progress of a nation can be gauged in terms of the quality of life from her efficiency in conservation and utilisation of perishables and per capita consumption of processed foods. Industrialised India still lags behind in these respects. The dimensions of the Indian processed food industry as presented in a summary of the organised sector (DGTD) (Table-1) is evidence enough.

There however exists a sector, the small and cottage scale sector of the Indian Processed Foods, which is highly dispersed and significant dimension in volume and value, but do not find a place in this statistics. An estimate on the size of this unorganized sector is presented in Table-2.

Table 1 : Food and Fermentation Industry (1984)

Sl. No.	Product	No. of Units	Quantity MT	Value (Rs. '000)	
1.	Biscuits	33	128000	16000	
2.	Confectionery	22	25000	4000	
3.	Bread	21	133400	4500	
4.	Soft drinks*	50	1600	1450	
5.	Malt extracts	5	4600	340	
6.	Weaning food	3	4500	1100	
7.	High protein food	9	7700	1560	
8.	Starch	11	140000	5100	
9.	Liquid glucose	12	55000	2200	
10.	Dex monohydrate	6	20000	1400	
11.	An-hydry. Dex	3	3800	400	
12.	Enzymes	1	650	25	
13.	Chocolates	6	6000	3500	
14.	Drinking chocolate	3	316	72	
15.	Cocoa powder	5	200	77	
16.	Cheese	2	1100	395	
17.	Sorbitol	4	6700	700	
18.	Manitol	2	23	15	
19.	Cocoa butter substitute	1	Nil	Nil	
	(closed due to lack of demand)				
20.	Fruit and Vegetable	32	50000		
21.	Baby Food	18	49000	21000	
22.	Skim milk powder	22	27000	5200	
23.	Whole milk powder	6	7000	10000	300
24.	Condensed milk	10	10600	1180	
25.	Butter	19	20000	2600	
26.	Ghee	9	23400	7800	
27.	Malted milk food	8	9000	6200	
28.	Ice cream	9	35000	10000	
29.	Guar gum	1	4	2800	
30.	Egg powder	2	4900	4	
31.	Instant coffee	2	1057	3400	
32.	Instant tea	9	3200	722	
33.	Fish	7	18000	2300	
34.	Meat products	4	5076	3600	
35.	Macaroni, Noodles, etc.	177	3520	510	
36.	Flour Milling	4	44	7000	
37.	Food colours			77	
38.	Breakfast food** -	4	660		
	- Pearl barley	3	430	200	
	- Corn flakes	1		50	
	- Oat flakes		205	15	
39.	Snack food	32	153929	39262 lakhs	
40.	Beer	90	494807	122886 lakhs	
41.	Ind. Alcohol		(est.)		
		7	4040	251 lakhs	
42.	Yeast	3	5000		
43.	Citric acid				

* Million bottles; ** Tonnes; + K.L

Source : Business Standard

While the total market for the processed food products comprises of the export market and the domestic market, domestic demand for processed food comprises of: requirements of the defence forces, hotels, restaurants and the institutional sector; and household consumers. The demand for household consumption depends on various factors viz., characteristics of the population, income levels and disposable income, growth of urban population and price of the products. Since convenience is an inherent component of processed foods, urban consumers will depend more and more on such products. Internal consumption is expected to increase with greater urbanisation and increased purchasing power and population.

Processed Food Exports

A share of the output by processed food industry is exported. The export incentives offered have been instrumental in achieving an encouraging trend in export performance atleast some groups of Processed Foods.

More than 90% of value of exports of processed food products is shared by fruit and vegetable products, marine products, meat and poultry products and cashew. Table 2 gives the export of food products from India.

Export of processed fruit and vegetable products expanded from 25,368 tonnes in 1976-77 to 38,120 tonnes in 1987-88. The most important item of exports are fruit pulp, jams, jellies and marmalades, fruit juices, pickles and chutneys, dehydrated vegetables, canned vegetables and fruit juice concentrates.

TABLE-2 : Export of Agricultural and Processed Food Products

Items	Quantity in Tonnes		Value in Rs. Lakhs	
	1987-88	1986-87	1987-88	1986-87
Fruit juices	3992	8814	245	533
Other canned & bottled frts	25976	30320	2682	3401
Canned vegetables	916	971	163	172
Dehydrated vegetables	876	1128	143	167
Pickles and chutneys	6360	5700	680	620
Fr/Fz. sheep/goat meat	7960	9378	2191	2297
Frozen buffalo meat	51540	36064	6704	4584
Canned meat	-	1376	34	321
Poultry products	-	-	85	54
Animal casings	-	-	381	232
Confectionery	-	70	46	13
Biscuits	1205	821	139	90
Guar gum	43947	28337	8021	3367
Alcoholic beverages('000 L)	-	142	-	78
Wheat bran	592	-	14	-
Malted milk food	821	892	204	208
Ghee	198	533	103	228
Starch and derivatives	1085	2683	36	71
Papads	3129	3343	503	490
Cocoa products	151	69	78	35
Walnuts in shells	256	300	42	58
Walnuts kernels	3876	4062	1214	1194
Mushrooms	70	68	1187	1013
Other processed foods	-	-	362	326
Fresh mangoes	14900*	10500*	1730	1200
Other fresh fruits	12500*	14500*	1250	1300
Fresh vegetables	30000*	28000*	2100	1960
Fresh onions	140996	265875	4213	5846
Fresh potatoes	111	27	5	Neg.
Basmati rice	330611**	237153	30788	20678
Other rice	67958	2689	3514	132
Wheat	491644	439105	7568	7481
Maize	50	10	1	Neg.
Bajra	5887	2408	149	66
Jowar	782	930	22	24
Ragi	52	74	3	2
Guar meal	NA	NA	NA	NA
Fish - frozen	97090	110060	52500	53900
& fish products	684020	1044060	17360	19000
Oilseed extractions	83010	97000	30900	27900
Spice & spice products	36010	43000	30700	32800
Cashew kernels	197030	192040	59200	57700
Tea, Qlnst. tea	88070	73040	26300	29700
Coffee				

* Estimated ; ** Exclude figures for Kandla for March, 1988

Processed food products are being exported to various countries; the major destinations of export were as below:

Major Destinations of Export of Processed Foods

1. Fruit and Vegetable Products

Mango juice/pulps	- USSR, EEC, Switzerland, Canada W.Germany, Middle East
Canned fruits	- USSR, Kuwait, Saudi
Canned vegetables	- FRG
Dehydrated vegetables	- W.Germany, UK
Pickles and Chutneys	- UK, Middle East
Fresh Fruits/Vegetables	- Middle East, UK, Sri Lanka, Malaysia, USSR

2. Meat and Poultry Products

Frozen Buffalo meat	- Malaysia, UAE
Canned meat	- Egypt
Poultry	- UAE, Maldives
Animal casings	- Spain, Japan, Holland
Fresh chilled sheep meat	- UAE, Saudi Arabia

3. Starch and Derivatives	- Japan, Iraq, USA, Singapore
4. Guar gum/meal	- USA, W.Germany, France, Malaysia
5. Confectionery and Indian Sweets	- Middle East
6. Biscuits	- Middle East
7. Papads	- UK, USA, Middle East, Singapore, Malaysia
8. Instant Coffee	- USSR, Hungary, UK
9. Instant tea	- USA, UK
10. Cocoa products	- Nigeria, Sri Lanka
11. Mushrooms	- France, Switzerland
12. Spice oils/oleoresins	- USA, Germany F.R, UK
13. Marine products	- Japan, USA

TABLE-3 : Productive Output of FPO Licencees (Tonnes)

	1986	1985
Fruit based Products		
Canned/Bottled fruits	8455	7279
Canned/Bottled vegetables	4140	5825
Jams/jellies/marmalades	18857	20222
Fruit juices	19384	20065
Fruit pulps	21701	43553
Squashes/crushes/cordials	7294	7683
Fruit syrups	241	260
Fruit nectars	215	175
RTS fruit beverages	24515	17822
Fruit juice concentrates	4109	3020
Chutneys	2216	2017
Pickles (exluding MISB)	14906	15366
Mango slices in brine	1580	2914
Preserves	3386	2571
Canned & crystallised fruits & peels	3848	3517
Dehydrated fruits	67	107
Dehydrated vegetables	1995	1928
Frozen fruits	7	1
Frozen fruit products	941	1515
Frozen vegetables	1040	836
Tomato products	9519	8825
Sauces (other than tomato)	2077	1751
Soups (other than tomato)	6	6
Other misc. unspecified products	309	214
Brewed vinegar	360	308
Synthetic vinegar	1753	1489
Synthetic jellies	40	66
Synthetic aerated water	338439	308045
Synthetic syrups/sherbets	8499	9855
TOTAL	499899	487235

All figures are provisional

Changing Trends

Many factors have contributed to the changing consumer preference and market trends in food selection. In the years since independence life style in the subcontinent have been changing enormously, particularly in the urban areas and among the burgeoning middle class. Age old religious taboos and ethnic

restriction in food are loosening with liberalised societies and their more rational attitudes and preferences. The pattern of food consumption is changing continuously. Idli, dosa, vada, dhakla, ragoda-pattis, bhel puri, parbhegi, rasgolla, fish curry and chicken tandoori have attained a national status and are being consumed all over the country and abroad. Non-vegetarian foods have crossed traditional caste barriers.

More women are working than ever before. Small families and working couples are common today, with scarce domestic help and less time available for cooking. More and more people are resorting to eating outside. Housewives are looking for the convenience built into food item and find the ready-to-serve ready-to-eat and fast foods, handy and even as a necessity ahead.

Hygienically prepared processed foods of good quality appeal to consumers. A decision made about the nutrients or other beneficial aspect provided by a food through labels, advertisements and various media, including television, normally leads to an increased demand of such foods.

High pressure marketing and advertising is the main factor for the success storey in marketing many of these new foods. It is reported that nearly 40% of the television advertising time was taken by food products category. Food Industry and advertising agencies have realised that the younger generation can be influenced by the high pressure advertising of their products not only for their correct sales but also with an eye on future market.

Newer development in packaging particularly in plastic and flexible packaging is revolutionising the food industry. These plastics and other flexible films not only protect the content of package but add convenience in handling during manufacture, storage, transportation and on the shelf and even disposal at consumers end. They have presented better and often more appealing.

Food industry in India has made significant progress in the last two decades in spite of the many hurdles, self sufficiency in technology, the information exchange between the developed and the underdeveloped, the incentives and opportunities for being modern and many other favourable factors will accelerate the production and consumption of processed foods.

MARKET AND MARKETING FOOD AND FOOD PRODUCTS - MAHARASHTRA STATE

Present status of food industries

Evaluation of the present status of the agro based industries in the state is a pre-requisite for identification of the possible new units based on agro resources. During the field survey conducted, Authorities like Directorate of Industries, DIC, SISI, Agro-industries Corporation, Dept. of Agriculture, Horticulture, Forestry, Animal Husbandry, Maharashtra State Co-operative Marketing Federation, APMCS, Zilla Parishads and leading farmers and industrialists, were important sources of information on this aspect.

Complete data on number of units in organised and unorganized sector their production, performance and constraints

was not available and according to information available, the data is compiled and presented.

Food Industries : An Economic Status in Maharashtra

According to the latest available data, Maharashtra continues to be the leading position in the industrial scene of India. The State accounts for 23 and 26% of gross value of output and valude-added respectively in the organized inustrial sector of the country.

As per the factory statistics 1985, there were 18,924 working factories in the State. In rural areas most of the factories belong to manufacture of food products accounting to almost 25% of the total. From the point of consideration of employment in rural areas the major share was of the factories - manufacturing of food and food products, accounting for 32%.

Considering the industries group food products; the total fixed capital during 1987-88 was Rs.705 crores. Mandays generated 355 lakhs and total output is of value Rs.3800 crore, and value-added around Rs.336 crores.

According to available data on registered agro-based industries in the State, registered with DIC 4752, under FPO 514 and in SISI 2123.

Scope for Marketing of Food Products

The better economic well being of the urban middle class and a larger share of our population forming this group created a perceptible upswing in the demand for processed foods in

the country. The emergence of working housewives with better purchasing power, but little time for household chores, appear to be is one of the major reasons for increase in demand for processed food products. According to a survey, more than 32% of housewives in metropolitan and major urban centres and 31% of housewives in rural areas, go for work outside home. This means considerable enhancement in the purchasing power of such families. The housewife "Home Manager" today seeks products which help reduce drudgery at home to the extent possible and convenience that provide value for money. Convenience food products to a large extent are geared to meet this need.

The other group of products in the food industry are essentially the preserved products - harvests of today, made available tomorrow, or processed to the extent to make them readily edible. Among the first category belong the frozen, chilled or dehydrated meat, fish, fruit and vegetable. The market for these products are likely to expand due to the increasing urban emans and the inability of the sub-urban areas and hunterland to the cosmopolitan cities being unable to meet the growing demands for fresh produce. The latter category of products and the opportunity for processing arises by virtue of the necessity to process them before consumption, such as milling of wheat, rice, jowar, etc. The necessity to supply intermediary products, the demand for speciality products to a discerning demand from the domestic or international market creates other processing opportunities and value addition.

Market Network and Market Outlets

Economic development of any state is directly linked to the marketing facilities that exist in the state. In Maharashtra there are mainly three types of Agricultural Produce markets viz., 1) primary markets known as hats or shandies at the village level, which are weekly markets, 2) secondary markets of the next higher order known as bazars or mandies, which are usually wholesale markets normally situated at district headquarters or near railway station; and 3) next higher order markets are terminal markets, where produce is assembled for further distribution within the state or for inter-state export.

Cooperative marketing has gained importance in Maharashtra State. The number of cooperative marketing societies at the end of June 1989 was 8201 with a membership of 7.2 lakhs, involving Rs.295 crore as working capital, and a total turnover of Rs.1350 crores.

Maharashtra State Co-operative Marketing Federation at apex level and Agricultural Product Market Committee, and Regulated Agricultural Marketing at base level are functioning as a two-tier system of cooperative marketing in the State. The main functions are to procure, purchase agricultural produce from growers directly, processed and market the same and distribute agricultural inputs and consumer goods.

Apart from the above, there were 111 wholesale consumer stores and 2650 primary consumer stores, besides the apex consumer federation. The sale of these consumer stores were Rs.360 crore during 1988-89 as compared to Rs.320 crores during 1987-88.

The market outlets for processed food products within Maharashtra State is limited mostly to higher income group and the institutional purchase. Maharashtra being a state of considerable tourist inflow, there are a large number of hotels in the state. These hotels are one of the major outlets for processed food products. Another major outlet are the industrial canteen. There are various large scale industrial units in the state and the industrial canteen form an another important consumer of processed food products. Defence establishment is also one of the major institutional buyer of processed food products. In addition, some of the major metropolitan cities, where the products can find market. To capture market in big cities aggressive sales promotion through media such as Television, Posters, Advertisements in theatres has to be carried out.

Marketing approach

Marketing involves all the activities undertaken in the transferring of products from producers to consumers. Marketing costs are an inevitable consequence of specialisation and this is a major constraint especially in small scale industries under food sector. The existence of a very strong cooperative marketing network will particularly of great value in marketing of food products in the State. Establishing of super markets under the cooperative sector to manufacture and market our products as well as products from other cooperative and private manufacturers can ensure successful marketing of products.

In economically advanced countries, needs are often created by manufacturers. but we are at a stage which calls for

needs to be met and the distance between the produce and the buyer is both physically and mentally large. Marketing assistance through specific programmes to sell the products in the country and abroad is essential to promote the well being of the entrepreneur initially and in the long run the economy of the industry itself.

Institutional Purchase Programme: Food processing industry has been making though slow fair progress. Part of it can be ascribed to production lags. In respect of the secondary processing such as making of jams and jellies, biscuits and confectionery, etc., there has been no shortage of raw material in general. Marketing has been the main constraint. At present marketing support to many of the products is provided by the organised public purchase through the Army Purchase Organisation, Railways and Airlines, ITDC hotel chains, etc. In fact, this Institutional cause provides the principal purchase support to fruit and vegetable products. Organised purchase by Institution had a role to play at a certain stage in the development of food industry, but cannot be the vehicle for continued expansion of the same. The products manufactured by the proposed food industry complex should be given preference in price in the matter of purchase of Government organisations, such as ITDC Hotels, Defence establishments, Government Industrial Canteens, etc. This programme is important atleast at the initial stages for stimulating and sustaining growth of the industry.

Distribution: One of the major tasks of a food industry is proper distribution of the products produced for marketing. Government

of Maharashtra should assist in the distribution of the products produced by the industries. Since most of the products suggested are consumer items, and the target market are similar, the transportation becomes more economical if common transporting facility is made available to the units. Wholesale depots can also be set up by the Government agencies to deal with the products manufactured by the food industries.

Advertising: Among the existing channels of communication in India, television is the fastest growing media. Television has a substantial advantages for an advertiser as it delivers the message with combined impact of sight, motion and sound. Television remain the most effective medium by which women section can be approached easily. Today almost all major consumer goods manufacturers are increasingly using television as a major, if not only media, for advertising their products.

It is understood that the large scale consumer product manufacturer spends Rs.5-6 crores per annum on television advertising only. The suggested consumer products to be manufactured in the food industries has to compete with other well established large units. Hence advertising in television may become essential and would involve huge expenditure at the product introduction stage. Maharashtra Government should extend support to product promotional campaign through television and other media partially financing or extending liberal credit facilities.

Trade mark and Brand names: Trade mark and brand names are much more than mere signs or names. A brand name is the title given to a product by its manufacture which must be distinguished from

trade name, which is the name of a business firm. Any food industry could choose one trade mark common for all products manufactured by them. Brand names for their products can be selected depending upon the type of product. Brand name should be communicative, suggestive, appropriate and easy to remember. Adequate support is necessary to all the individual industries in the proposed complex for popularising the trade name and OSIC is expected to undertake this task. Further, a system of franchise with reputed producers should be explored for the benefit of various units.

Capitalisation of marketing funds: The consumer products manufactured today has to incur substantial amounts of funds for various marketing activities. It is much more at the time of launching the product. As discussed earlier, the company has to face competition from established brand some from even multinationals.

Sales promotional and marketing expenses should be funded by the financial institutions in view of the fact that survival of the industry mainly depend on its marketing efforts. The financial institutions hence should provide both term lending and capital funds. This expenses should be included in the project to come under capital funds. The food industry is engaged mainly in the manufacture of consumer food products and hence an effective marketing strategy is needed for its success. Government support in the form of finance, favourable policies and marketing infrastructure is of importance for the success of the project.

ANALYSIS OF MARKET FOR SELECTED FOOD PRODUCTS

This Chapter deals with evaluation of market potential of selected food products based on the available surplus agricultural and food resources in Maharashtra, both in the context of the total market in the country as well as in the State. An attempt has been made to analyse the demand and supply situation.

The nature of products identified varies widely. Considering the nature of the products identified and the market segment, appropriate methodology has been adopted for assessment of the potential demand of the visualised items in the country/ in general and in Maharashtra, in particular. The data handled is

mainly through desk research and field data collated. Attempt has been made to project the demand for individual product by appropriate techniques/methodology

Majority of the products visualised are consumer products which needs wide distribution and concentrated efforts in sales promotion. The chart presents the overall picture of the different industries in India.

The products proposed to be produced are not new to Indian market, hence creating product awareness among consumers is not considered warranted. In majority of cases there are established brands in the market and hence creating brand awareness is the most important part of the marketing programme.

ENERGY FOOD

Energy Food/Multipurpose Food/Balahar, etc. are high protein foods designed for the purpose of supplementation of the nutritional needs of the under and malnourished. The total estimated production of Energy Food from the six units in Karnataka, one unit in Gujarat, one unit in Andhra Pradesh is only of the order of 20,000 tonnes per annum.

Demand

The percapita State income at current prices is estimated at Rs.5,155 for the year 1988-89 as against Rs.4,535 in 1987-88, showing an increase of 13.7%. As compared to national percapita income of Rs.3835, the State percapita income is higher. By this index, Maharashtra occupies a little higher position in standard of living

Maharashtra has various social welfare programmes such as (a) Drought prone area programme, (b) Command area development authorities; (c) Economic rehabilitation of rural programme; (d) National rural employment programme; (e) Integrated rural development programme, etc. and achieving higher standards of nutrition is an essential component in the social and economic upliftment programme. At present 24.06 lakhs population in the State live in age group of 0-14, of which about 16.29 lakh population are in rural areas alone. If 25% of this rural group is brought under welfare programme and if a minimum of 80 g of nutritive supplement like energy food is provided to each beneficiary/day, then the requirement of such food would be about 130 tonnes/day.

One of the major social welfare programme being supported by majority of the States is the mid-day meal programme for school-going children. At the low level of estimate, in Maharashtra, there are about 101.15 lakh school-going (Primary) children with more than 75% enrollment in primary school. If 50% of school going children are provided with mid-day meal supplement of Energy Food, then the requirement of the product would be around 404 tonnes per day.

The product could also be sold in the open market in the form of protein rich/weaning food.

Conclusion

At present Maharashtra does not have any unit manufacturing energy food or a similar product meant mainly for feeding programmes; in view of this and the above facts, there is an immediate need for establishing manufacturing units for protein and calories rich foods in Maharashtra, as the raw materials are available in plenty and the process is not expensive.

WEANING FOOD

Weaning practices depend mainly on culture and tradition and what one can afford. Both commercial as well as home-made weaning foods are being used in India. The use of commercial weaning food has been steadily increasing due to (a) urbanization, (b) large number of working women, and (c) improved economic conditions. It has been found from various studies that commercialised weaning food is used mainly by the upper middle class and high income groups.

Industry status

At present, weaning food is being manufactured by three DGTD units. There are three brands of weaning food marketed by these firms. These products have been mainly advertised in media such as women's magazine as well as in TV commercials. Recently these firms have introduced wide variety of weaning foods under the same brand name. The products available with apple, vegetable, dhal, egg, etc.

The production of weaning food has shown an increase over the years, though there was slump in production in the year 1983. The 1980-84 production figures are as follows :

Year	Quantity (M.Tonnes)
1980	3101
1981	3500
1982	4406
1983	3437
1984	4384

Demand

The population of 0-4 age group constitute about 13.9% of total population. Hence, there are 116.3 million children of this age group. If 10% of the children fall within age group who consume weaning food and taking into consideration the high income group only (10%), who are likely to be the target market for commercialised weaning food, the total number of children who are likely to be fed with commercial weaning food would be 20 million. Due to traditional food habits and beliefs the entire target population do not consume commercialised weaning food. If 50% of the target group is taken as the actual consumers of weaning food and if once a day 40 g weaning food is fed to a child, then the requirement of weaning food in the country would be around 8000 Tonnes. It is estimated that the present production of weaning food in the country is around 5500 Tonnes. Hence, a gap of 2500 Tonnes needs to be bridged.

Conclusion

The current price of commercially available weaning food is more than Rs.40/- per kg. The ragi based weaning food can be produced at a much lower rate than that of the present commercially available weaning food. This product is also likely to take a substantial share of existing market and create a new class of customers who are price conscious. If weaning food can be produced and marketed at competitive price supported with advertisement campaign, there seems to be a good potential for this product.

PROCESSED FRUITS AND VEGETABLES

The production of processed fruit and vegetables embraces a variety of products. Based on the pattern extrapolated from the latest available data, it is estimated that fruit and fruit-based products account for 73% and processed vegetables and vegetable products for 27% of the total production of fruit and vegetable processing industry. The important items produced and their share in total production is estimated as below: Fruit juices (18.96%), Jams, jellies and marmalades (17.11%), Fruit pulp (16.48%), Pickles (10.23%), Ready-to-serve fruit beverages (RTS) (8.22%), Canned/bottled vegetables (5.14%), Squashes, crushes and cordials (4.09%), Canned and bottled fruit (3.88%).

Market Domestic

For the processed fruit and vegetable industry the domestic market comprises of (a) defence sector; (b) institutional sector and (c) individuals. Institutional sector is mainly represented by hotels and restaurants, hostels, industrial canteens and flight kitchens.

Domestic consumption of processed fruit and vegetables has shown a sustained annual growth since 1979, although its share in total output has declined over the years as compared to exports. The consumption increased by 22% to an estimated 78.04 thousand tonnes in 1984 from 63.98 thousand tonnes in 1983. It had recorded a growth rate of 4.2% in 1983 and 19.7% in 1982. The share of domestic consumption in the total production rose to 55.74% in 1984 from 53.39% in 1983 and 44.93% in 1982. It had declined to 56.80% in 1981 from 67.25% in 1980.

Of the estimated production of 140 thousand tonnes of processed fruit and vegetables in 1984, 78.04 thousand tonnes of 55.74% was consumed in the domestic market. According to a rough estimates, households accounted for 10 to 15% of the total domestic consumption of processed fruit and vegetables in 1984, while the balance of 85 to 90% was accounted for by institutional buyers like hotels, restaurants, airlines, hospitals, etc. and by the defence establishment. Defence consumption is about 7 to 8 thousand tonnes per annum or 9 to 10% of the total domestic consumption.

Export Market

Exports of processed fruit and vegetable products expanded from 6206 tonnes (valued at Rs.1.80 crores) in 1967-68 to 61,300 tonnes (valued at Rs.57.68 crores) in 1984-85. Between 1980-81 and 1984-85 export of processed fruit and vegetables spurted by 104.6% from 29.97 thousand tonnes to 61.30 thousand tonnes and by 155.7% in terms of value from Rs.22.56 crores to Rs.57.68 crores. Exports were targeted to touch 162 thousand tonnes valued at Rs.150 crores during the Seventh plan period, while the achievement was Rs.132 crores in value.

The most important items of exports are fruit pulp, jams, jellies and marmalades, fruit juices, pickles and chutneys, dehydrated vegetables, canned vegetables, squashes, syrups and cordials and fruit juice concentrates. Jams, mango juice and pineapple products are almost exclusively exported to USSR, while mango pulp is exported mainly to West Asia.

The annual average value of exports of fresh fruits between 1980-86 is of the order of Rs.18.80 crores of which Rs.6.44 crores are realised from exports of mangoes and Rs.11.44 crores from exports of other fresh fruits representing a share of 35.62% and 62.38%. The importing countries were UAE, Kuwait, Saudi Arabia, UK, Bangladesh and USSR. Lions share of the fresh vegetable exports is accounted by fresh onion. Among other vegetables 60% is accounted by Okra, and the next in importance are bittergourd, chillies and assorted other vegetables. On the processed fruits and vegetables, mango alone accounts for 62% exports in 1987-88, with pickles and chutney occupying the second position with 19% of value. Mango juice and other fruit juices have a 3% share each and jams 4% share and other canned and bottled fruit products have a 7% share. The average annual export of processed vegetables are of the order of Rs.5.10 crores, Rs.2.32 crores from canned vegetables and Rs.2.78 crores from dehydrated vegetables. Among dehydrated vegetables the main items are dehydrated onion and garlic.

The important products and markets in the fruits and vegetables - fresh and processed are :

Fresh mangoes	- UAE, S.Arabia, Kuwait, UK
Tabe grapes	- Middle East
Apple	- Bangladesh
Onion	- Singapore, Malaysia, Sri Lanks & MiddleEast
Okra	- Middde East, UAE, Kuwait, Saudi and Qatar
Bittergourd	-do-
Other vegetables	-do-

Processed - Fruits & Vegetables

Mango juice	-	USSR, Saudi Arabia
Mango pulp	-	EEC, Switzerland, Canada, Holland, West Germany
Mango concentrate	-	-do-
Pineapple slices/ titbits	-	USSR
Tomato paste/pulp	-	Nil
Papaya/Guava Products-		UK, Middle East

The potential markets for fresh fruits and vegetables are Singapore, Malaysia, France, Netherlands, West Germany, UK, Japan, Mauritius, EEC, Middle East, while for processed fruits and vegetables, USSR, EEC, Middle East, UK, Canada, Holland and West Germany will continue as dominant markets.

Fruit and Vegetable Industry in Maharashtra

Maharashtra is one of the States with least number of fruit and vegetable industries compared to the size and population of the State. As per 1987-88 data, there are 514 fruit and vegetable units registered with FPO.

For Maharashtra State with a population of about 627.80 lakhs in the year 1981, the projected population for 2001 will be 868.80 lakhs. If 25% of this population who live in towns is taken as target group for processed fruit and vegetable products then there would be 217.2 lakh population or 43.44 lakh households in 2001 AD who would be the probable users of fruit and vegetable products. If on an average 4 kgs of fruit and vegetable products is consumed by a household per year then the requirement for the

product in the State would be 173.80 lakhs tonnes. Maharashtra State can also cater to the needs of metropolitan cities. There is hence potential for setting up of fruit and vegetable processing units since the percapita consumption is so minimal vis-a-vis the availability of resources.

The proposed food industry will be set up to manufacture canned fruit juice, fruit pulp, fruit juice concentrate, tomato products, dehydrated vegetables, etc since all the products have a relevance in the domestic market and offers potential for export.

Canned Products

The production of canned fruit and vegetable over a decade has shown a very slow progress.

The export of canned vegetable is about 20 to 25% of the total production, and the remaining 75 to 85% is catered to the institutional buyers such as hotels and defence establishments. In the case of canned fruits 50% of the production is exported.

Canned/Bottled Fruit and Vegetable

	Production (Tonnes)	
	Vegetable	Fruits
1980	5379	4901
1981	5033	5822
1982	7030	5307
1983	5360	4480
1984	6010	6702
1985	5825	7279
1986	4140	8455

Canned/Bottled Fruit and Vegetables

	Exports (Tonnes)			
	Vegetable -----	% of Production -----	Fruit -----	% of Production -----
1982	1421	20.2	2267	50.3
1983	1400	26.0	1277	50.0
1984	1515	25.0	2615	52.0

Production and exports of canned vegetables and fruits have been increasing speedily in other parts of the country since 1983. It is expected that this growth rate would continue. In view of the availability of fruits and vegetables, and the lack of processing facility in the State, it is suggested that canning units be established in the State, specifically to process the available fruits and vegetables in the State and to principally meet the localised and export demand.

FRUIT JUICE/PULP

The market for fruit juice and pulp has been expanding due to the export demand which has been increasing steadily. In the case of fruit juice export share has reduced from 88% in 1982 to 67% in 1984, whereas in the case of fruit pulp the share has increased from 82%.

	Production (Tonnes)	
	Fruit Juice	Fruit Pulp
1976	11973	3357
1981	18870	10197
1982	25914	22522
1983	11119	21264
1984	20495	21057
1985	20065	43553
1986	19384	21701

	Exports (Tonnes)V			
	Fruit Juice	% of Production	Fruit Pulp	% of Production
1982	22859	88.2	18590	82.5
1983	7344	66.0	18454	87.0
1984	13701	67.0	21013	100.0
1985	20405		12743	
1986	21938		14343	

The production of fruit juice and pulp has shown an encouraging trend over these years. Till the end of 1984, fruit pulp and juice were mainly being exported. However, since 1985, a large quantity of fruit pulp is being used for internal market for manufacture of RTS beverages in tetrapacks. It is estimated that about 10,000 to 12,000 tonnes of fruit pulp is being consumed by RTS beverage manufacture alone giving rise to a new manufacturing opportunity for domestic marketing.

TOMATO PRODUCTS

Precise statistics on production of tomato products in recent years is not available. India produced 3330 tonnes of tomato products during the year 1976 and 8825 tonnes during 1985. Based on this the average annual growth rate of tomato production during the period 1976-85 works out to be 1.6% per annum and at this growth rate of the industry. It constitutes mainly of ketchup/sauce. However, it is expected that the rate of growth would be of the order of 20%, because of major units such as M/s Nestle (India) Ltd., M/s Voltas Ltd., All Seasons Foods Ltd. entering the market with high pressure advertising and promoters. At 20% growth rate between 1985 and 1987, the present production would be to the tune of 15,000 tonnes and in 1990-91 it is expected to be around 19,600 tonnes.

There are around 20 units engaged in production of tomato ketchup, tomato sauce and tomato paste in India. Tomato ketchup is being marketed at national level by four companies and the demand for ketchup is reported to be increasing steadily. Other than the household sector, Institutional sector such as hotel and industrial canteen; are some of the major potential consumers of ketchup. Consumer is now offered varieties of tomato ketchup such as hot and sweet, chilli, garlic by brand leaders like Kissan, Maggi and Volfarm, All Seasons, Etc.

There appears to be a need for setting up few units to process tomato in Maharashtra due to its abundant availability and the rate of growth of demand for the product. Apart from household sector, Maharashtra is a State of Tourist interest and has major hotels who are expected to be the bulk consumers of ketchup and sauce.

TAMARIND PRODUCTS

Tamarind is an important adjunct/condiment used as an acidulant in Indian cookery. India produces about 2.5 lakh tonnes of tamarind and nearly 12% of total production is from Orissa. Major share of the production of tamarind is used in unprocessed form in the domestic market.

Tamarind concentrate and tamarind powder are value added products developed with a view to introduce convenience to housewife. The products are hygienic, easy-to-use and convenient in distribution and storage. Exports of tamarind have been showing an increasing trend, the major destinations being Iraq, Syria and Gulf countries. Thailand, Malaysia and Indonesia are the major competing countries. More than 6000 tonnes of tamarind is exported from India during 1984-85. Exports of tamarind during the last seven years are as follows:

Value : Rs. Lakhs
Quantity : M. Tonnes

Year	Fresh Tamarind		Dried Tamarind	
	Quantity	Value	Quantity	Value
1978-79	3315.20	78.05	3187.00	141.61
1979-80	4735.00	170.60	4415.99	224.60
1980-81	2465.00	101.20	3366.00	184.00
1981-82	240.00	15.90	2653.00	176.30
1982-83	732.00	46.30	3098.00	234.60
1983-84	525.00	19.40	4986.00	271.90
1984-85	1012.00	50.50	5070.00	372.20

There are about six units manufacturing tamarind powder and tamarind juice concentrate in India. Tamarind powder is being marketed within the country whereas substantial quantity of tamarind concentrate is being exported mainly to Gulf countries.

Export of tamarind concentrate from India

<u>Year</u>	<u>Quantity (Tonnes)</u>	<u>Value (Rs. Lakhs)</u>
1979-80	12.00	1.92
1980-81	5.0	0.85
1981-82	22.0	3.60
1982-83	43.0	9.15
1983-84	9.0	1.80
1984-85	139.0	17.28

It can be expected that in future tamarind in fresh and dried form would be replaced by tamarind concentrate and tamarind powder. Tamarind powder and juice concentrate has so far exploited only a very small share of the potential domestic market, and this scene could change if the products are backed up with promotional and advertisement measures.

The production of tamarind in Maharashtra is quite low. It is found that there is no tamarind processing units in the State. The State has the potential to establish a few units for processing tamarind and kokum as acidulants in traditional Indian cookery.

FRUIT BAR

Fruit bars are a convenient form of preserved fruit pulp. Although similar products from preserved fruit pulp has been popular in the traditional Indian market, this potential market does not appear to have been exploited to any substantial extent.

Presently, there are only 3 units producing fruit bars, of which only one brand 'Naturo' has attempted to market the product nationally. Also, the present manufacturers attempt has been to market the product as a consumer product directly, while no effort has been made to promote the product as an alternative to fresh fruits for incorporation in ice-creams, cakes, etc. In Maharashtra there are presently no unit engaged in manufacture of fruit bar, either traditional or CFTRI technology.

The total production of fruit bar presently is estimated at about 180 tonnes (1989-90) per annum. The outlook on the market indicates a good potential and there is scope for additional units and national marketing of fruit bar. Other fruit bars such as banana, mango, apple are likely to attract consumers and substantially expand the market. The USSR and UK have evinced considerable interest in the fruit bars from tropical fruits such as mango, guava and banana.

SPICE/MASALA POWDER

In India spices are mostly consumed in either raw or processed form for their traditional food. Domestic market for spice powder/masala powder (blend of various spices) is growing at a fast rate. Television, the two pay cheque family and increasing level of disposable income has their role to play in spice mix market.

Very little information and statistics are available on industrial utilization of spices for preparation of spice powders and spice mixes due to the wide distribution of their production and consumption. A major quantity of production of spice powder originates either in the homescale or cottage level units and are distributed all over the country. It is estimated that there are about 1500 such units in the country.

According to available information, there are around 20 manufacturers all still small scale industries, packing spice mixes and majority of these companies are also engaged in exports. There are very few companies who have attained national market for their products.

India exports substantial quantity of spice powder and spice mixes. The Middle-East is the principal region in which export markets have been established. Other export markets are Australia, UK, Canada, USA, Belgium, Switzerland and Germany.

Export statistics of various spice powders is as below (1986-87):

	Quantity (Tonnes)	Value (Rs.Lakhs)
Chilli powder	996	106
Coriander powder	284	38
Ginger powder	40	6
Curry powder	2902	433
Turmeric powder	3676	384
Spice powder (Others)	705	132

Source : Monthly Statistics of Foreign Trade

The major export items are turmeric powder and curry powder and the export of these two items over the years is as below:

Year	Curry Powder Export		Turmeric Powder Export	
	Quantity (Tonnes)	Value (Rs.Lakhs)	Quantity (Tonnes)	Value (Rs.Lakhs)
1981-82	1805	200	2429	103
1982-83	2815	336	2610	145
1983-84	3402	356	4809	444
1984-85	3554	419	4476	528
1985-86	2527	366	1989	264
1987-88	2902	433	3676	384

Source : Monthly Statistics of Foreign Trade

Exports of both curry powder and turmeric powder has shown a steadily increasing trend until 1984-85, after which it has declined in the year 1985-86 and again picked up in 1986-87. Major share of export of spice powder and spice mixes is reported to be exported in bulk packs and small quantity in consumer packs. Emphasis has been made in export policy for unit packed spices, for higher value realisation.

Substantial quantity of various spices are grown in Maharashtra and at present there are no major units engaged in production of spice powder and spice mixes in the State. There are cottage/home scale units in the State for grinding of spices. But they cater to a very limited local market. Their scale of operation is very small. Both domestic and export market for spice powder and spice mixes have been showing an encouraging trend. The projected demand for spice powders in India is around 125,000 tonnes by 1990. Hence, there exists potential for starting a few units for production of spice powder and spice mix in Maharashtra.

SQUASHES AND CORDIALS

The production of squashes and cordials have more or less stagnated. It has shown a declining trend over the years due to partial displacement by synthetic fruit juice flavour powders. The export of squashes/cordials also is negligible. It forms only 0.1 to 0.2% of total production. According to a survey conducted following is the value of sales of squashes and cordials as compared to fruit juice powder :

Soft Drink Concentrate and
Fruit Drink bases (1985) Crores

Squashes	4.98
Cordials	0.32
Crushes	0.34
Powders (synthetic)	6.79

The demand for soft drink juice powder is rising at a fast pace and this has had an adverse effect on growth in demand of squashes, cordials.

Squashes and Cordials

Production (Tonnes)

1976	4791
1981	5033
1982	7030
1983	5930
1984	7717
1985	7683
1986	7294

There are 514 FPO licencees in Maharashtra, manufacturing Fruit and vegetable products in sizeable scale. The State's requirement is met by firms established inside and outside Maharashtra. Generally squashes, cordials, syrups, etc. are produced in a general purpose fruit & vegetable processing unit in order to optimise capacity utilization as well as at least marginally increase sales turnover.

DESICCATED COCONUT

Industry Status

Desiccated coconut - a product obtained by dehydration of coconut endosperm is mainly used by Indian sweetmeat, pastry, biscuit, pan masala, confectionery and by some instant mixes manufacturers. There are 16 desiccated coconut manufacturers registered with Coconut Development Board. These units are located in Karnataka, Tamilnadu & Kerala States.

Data on quantity of desiccated coconut incorporated by various user industry is not available. However, based on estimates, following would be the requirement of desiccated coconut:

a.	Indian sweetmeat industry (1% level of incorporation in 10% of production)	- 320 Tonnes
b.	Biscuit and pastry products (0.1% level of incorporation in 50% of production)	- 7500 Tonnes
c.	Confectionery industry	- 350 Tonnes
d.	Others - instant mixes, etc.	- 100 Tonnes
	Total requirement	- 8000 Tonnes Per Annum

The current production in the country is about 4000 Tonnes only and hence there is a gap in the total estimated requirement to the tune of 4000 Tonnes.

Maharashtra with a long coastal line is abundant and the coastal districts particularly coconut, has a potential to set up a few units for manufacture of desiccated coconut.

According to available data, 763.3 lakh numbers (1986-87) coconut is produced in the State, mainly from Bombay suburb, Thana, Raigad, Ratnagiri and Sindhudurg, of which a good share is absorbed for fresh consumption and a small share for oil and cake.

The product can also be marketed to nearby metropolitan cities in neighbouring State in addition to the internal market in the State.

FRESH FRUIT AND VEGETABLES

The consumption pattern of fresh fruits and vegetables is changing significantly. The current emphasis on health food and premium placed on freshness have contributed to the rise in demand for fresh fruits and vegetables.

The development of refrigerated transport by sea, which brought about a reduction in transportation costs, growing number of travelling, thus becoming familiar with new foods and the effects of advertising campaigns by major companies, brought out major changes in the market for fresh fruit and vegetables.

The ECE (United Nations Economic Commission for Europe) has established standards for quality size, packaging and marketing of various fresh fruits and vegetables. This makes easy for export of fresh fruits and vegetables to select grade and packaging of fresh fruits and vegetables.

Theoretically, according to historical data India's market for export of Agricultural Products and Processed Food covers as many as 98 countries.

Onions exported in large quantities, with annual average export exceeding 1 lakh tonnes. Fresh vegetables and canned bottled fruits in the range of 20,000 to 30,000 tonnes. Fresh mangoes and other fresh fruits at the range of 10,000 to 20,000 tonnes.

The fresh mango export have increased from 3000 tonnes in 1976-77 to nearly 15,000 tonnes in 1987-88 with a corresponding

value from Rs.2.11 crores to Rs.17.30 crores. Export of other fresh fruits have increased only marginally from 7000 tonnes to 12,500 tonnes with a corresponding increase in value from Rs.1.76 crores to Rs.12.5 crores.

Fresh vegetables on the other hand have increased more substantially from about increase in value from Rs.1.98 crores to Rs.21 crores.

Fresh category has registered an increase in value of exports from Rs.27.60 crores in 1976-77 to Rs.92.68 crores in 1987-88. It shows that mango export have increased by 432%, other fresh fruits by 390%, fresh vegetables by 833% in the case of fresh group as a whole by 437%.

Export of Fresh Fruit and Vegetables

(Value - Rs.Lakhs)

Product	Average Annual	Highest Value	1988-89	Average Annual, %
Onion	3450	5846	6400	13.4
Fresh vegetables	1435	2100	5606	5.6
Fresh fruits	1870	3044	-	7.1
Processed - Fresh	3760	6500	4231	14.5

Export of Fresh Fruits (Commodity wise)

Countries to which	Mangoes			All Other Fruits		
	Annual Average - 1980-86			Annual Average - 1980-86		
	Value (Rs. Lakhs)	% of India's Export of this Product	% of Total Import of this Country from India	Value (Rs. Lakhs)	% of India's Export of this Product	% of Total Import of this Country from India
UAE	479	41.80	9.70	137	11.70	2.80
Kuwait	194	16.90	14.00	35	3.01	2.50
Saudi	178	15.60	8.90	-	-	-
U.K.	55	4.80	4.60	-	-	-
Bangladesh	-	-	-	352	30.20	77.40
U.S.S.R.	-	-	-	250	21.50	9.70

Export of Fresh Vegetables

Countries to which	Onions			All Other Vegetables		
	Annual Average - 1980-86			Annual Average - 1980-86		
	Value (Rs. Lakhs)	% of India's Export of this Product	% of Total Import of this Country from India	Value (Rs. Lakhs)	% of India's Export of this Product	% of Total Import of this Country from India
UAE	1016	26.40	19.30	271	17.00	5.16
Malaysia	843	21.90	41.20	-	-	-
Srilanka	529	13.70	66.79	105	6.60	13.80
Singapore	409	10.60	81.15	-	-	-
U.S.S.R.	261	6.80	9.04	-	-	-
Kuwait	113	2.90	8.55	238	14.90	18.01
Saudi	-	-	-	433	27.00	19.95
Bahrain	-	-	-	120	7.50	29.40
Qatar	-	-	-	115	7.20	47.50

IMPORTS OF FRESH FRUIT AND VEGETABLES INTO SELECTED
EUROPEAN MARKETS - 1986

Quantity - Tonnes							
Country	Aspa- ragus	Amber- genes	Beans	Capsi- cum	Grapes	Mango	Melons
Germany, FRG	21966	13458	16211	140876	311995	3083	28180
Switzerland	5571	1735	3832	11639	37809	-	20494
Belgium	1417	1693	16616	10059	38843	656	15204
U.K.	1276	5219	5890	33027	93939	8831	80845
France	550	19578	34436	52986	135419	6171	9961
Austria	377	2315	1246	11009	42129	-	16460
Netherlands	247	2759	26363	25490	54822	4441	27619
Denmark	73	558	171	6124	9835	268	2571
Sweden	62	NA	130	11776	25478	481	13309
Norway	NA	NA	NA	NA	20165	-	-

As per arrivals of fresh fruit and vegetables in regulated markets of Maharashtra, the trend shows that chilli 27100 tonnes, onion 768300 tonnes, banana, 75200 tonnes, orange 462300 tonnes, mango 44700 tonnes and grapes 1400 tonnes.

After arrival it is found that it is auctioned as such for retailers. Good quality, graded, trimmed and unit packed vegetables, will find a good market at home and abroad on premium prices.

Products like asparagus, onion, aubergenes (Brinjal), beans, capsicum, lady's finger, grapes, mango and melons find a very good export market potential, and it can be exploited.

After grading and quality produce selected for export/domestic market, the remaining may find a place in dehydration industry.

ONION

Onion is widely used in culinary preparations. Fresh onions are used widely compared to dehydrated slices or powder.

Onion is exported in large quantities with annual average exports exceeding 1 lakh tonnes, leading in terms of quantity. The export of fresh onions have increased from 1.63 lakh tonnes in 1976-77 to 2.65 lakh tonnes in 1986-87.

TABLE-1

Total Export to	Annual Average - 1980-86		
	Value in Rs.Lakhs	% of India's Export	% of Total Import of this Country from India
U.A.E.	1016	26.40	19.30
Malaysia	843	21.90	41.20
Srilanka	529	13.70	66.79
Singapore	409	10.60	81.15
U.S.S.R.	261	6.80	9.04
Kuwait	113	2.90	8.55

In dehydrated form to countries like UK, FRG, USSR, France and Japan, dehydration onion contributes 37% of total value of dehydrated vegetables exported.

Maharashtra produces 28.6% of India's production of onion. In that Nasik alone accounts for 14.3%, 50% of State's production of onion comes from Nasik.

In export of onion in respect of percentage of production, Nasik alone contributes 66.41% during 1984, 43% during 1985, 67% during 1986, 28% during 1987 and 22.16% during 1988. It would be seen that export went down in comparison to previous years, because more of Nasik onion was used within the country and it faced high competition in International market.

Export of onion from Nasik as a percentage to total onion exported from the country is very impressive, as is evidenced from the following table :

TABLE-2

Year	Total Export from the Country '000 Tonnes	From Nasik '000 Tonnes	% to Total Export
1983	181.93	114.01	62.70
1984	282.43	159.88	56.60
1985	263.17	170.32	64.70
1986	265.84	166.41	62.60
1987	166.07	98.13	59.10

Due to many constraints like pest problem, quality fluctuation in prices, storage, processing, transport, etc. the farmers are facing the problem in judicious disposal of onions.

Cultivation of recommended varieties, pest control management, improvement of storage facilities and preservation by irradiation (A change in Govt. policy) definite export policy, can bring about the tremendous improvement and assistance to farmers.

As can be seen from Table-1, most of India's onion is exported to Eastern block, and Western block is virtually untouched. It is due to variety, Western block prefers white variety of onion compared to our coloured variety.

Dehydrated onion slices and powder from white variety is most favoured in Western block, as compared to Egyptian onion. This factor is to be looked into, to tideover these constraints in marketing of onions.

DEHYDRATED VEGETABLES AND FRUITS

Among all the possible food preservation methods, dehydration commands itself to military feeding of its logistic advantage which includes saving in space, weight, easy and economic packing, transportation, warehousing and distribution, long shelf life, convenience of cooking and availability at all times of the year.

The major dehydrated products from the country are dehydrated onion slices, powder, garlic powder, dehydrated ginger/powder, potato slices/fingers and leafy vegetables.

✕
According to estimated export of agricultural and processed food products, dehydrated vegetables exported to a tune of 876 tonnes, which is of the value of Rs.163 lakhs in 1987-88, and in 1986-87, 971 tonnes valued at Rs.172 lakhs.

The major countries for export of these items are FRG, U.S.S.R., France and Japan.

In domestic market, defence requirement is more in dehydrated form and civilian markets have also gradually started responding favourably to dehydrated vegetables.

Total Export to	Annual Average - 1980-86		
	Value in Rs. Lakhs	% of India's Export	% of Total Import of this Country from India
U.K.	32	11.50	2.50
FRG	34	15.79	6.50
U.S.S.R.	57	20.50	1.97
France	23	8.27	4.62
Japan	22	7.91	9.79

— This type of unit can be established near fresh fruit and vegetable trade unit, so as to get the ungraded and remaining vegetables for dehydrated purposes.

CASHEW PROCESSING

Cashew processing industry in India has flourished primarily depending on the International market. India is the largest producer of raw cashewnut in the world and accounts for 45% of total world production. This raw material endowment is a positive aspect for promoting processing industry.

The importance of cashew industry to the economy is two fold - its labour generation capacity as it provides gainful employment and its export potential earning substantial foreign exchange.

Internal consumption in India has been growing annually at a modest 3% in terms of kernels and nearly 57% of indigenous production is being diverted for home use, leaving only 43% for the export. If the world consumption trends persist, about 45,000 tonnes will have to be exported and this will require 1,80,000 tonnes of raw nuts. This is possible only if more of home grown nuts are procured and processed for export.

Cashew export is only around 50 years old. Internal marketing was generally along traditional system where each processor procured his own raw nuts, both imported and local.

From the beginning, the cashewnut industry was dependent on imports from East African countries. Imports of 32,000 tonnes in the 1940s increased to over 2 lakh tonnes in the 1970s and

declined to 21,000 tonnes in early 1980s. Imports have been going down steadily as more cashew growing countries are setting up processing industries of their own.

INDIA'S SHARE IN CASHEW TRADE

Year	World Consump- tion of Kernels	India's Export	% Share in Global Market	India's Import	Indigenous Production reflected in Export	% of Indigenous Production reflected in Export
1984	55498	31142	56	33283	95370	45
1985	70596	31608	45	27749	98683	44
1986	67192	37395	56	44210	105375	44
1987	58731	37367	64	45515	103953	42
1988*	36206	31892	-	26005	101564	40

* Relates to three-quarters only

The percentage of indigenous production in export trade ranged from as low as 19.7 in 1970-71 to as high as 65.5 in 1976-77. In 1988 it was only 40% and 1,01,564 tonnes of raw nuts were used for export purposes and remaining 26,005 tonnes were from imports. The indigenous production reflected in exports has been almost steady around 43% in the past 5 years.

The export figure for 1987-88 was of the order of 36,949 tonnes, valued at Rs.322.71 crores, and 1988-89 33,645 tonnes valued at Rs.273.35 crores.

Imports of raw nuts were 42,256 tonnes valued at Rs.65.25

crores in 1987-88, and 29,467 tonnes valued at Rs.40.40 crores in 1988-89.

India has been facing serious competition from Brazil. The pattern of India's exports shows that the American zone accounted for 53% in 1965 but only 17% in 1982. In 1988, the figures for India and Brazil were 26 and 57% in the US market respectively.

b) CASHEWNUT SHELL LIQUID (By-product Utilization)

Cashewnut shell liquid is extensively used by paint industry. It is also used by chemical industries, dyeing, tanning of leather and shipping industry. As paint industry in India is increasing rapidly, more cashewnut shell liquid is required to meet the expansion programme of the industry.

Production statistics of cashewnut shell liquid in India is not known. However from total availability of raw cashewnuts in 1984-85, the recoverable cashew shell liquid was 15,000 tonnes.

India exports substantial quantity of cashewnut shell liquid. In the year 1984-85, India exported 3864 tonnes of cashewnut shell liquid valued at Rs.2025 lakhs and the major importing country being Japan. It is reported that export trade of cashewnut shell liquid is also increasing.

With the growth of paint industry and other industries requiring cashewnut shell liquid and growth of export of cashewnut shell liquid itself, there exists substantial potential for

production of cashewnut shell liquid. Large quantity of cashewnut shell liquid is now being lost due to improper processing and hence need for setting up of units in Karnataka for better shell oil recovery is felt.

In 1980s, imports have been going down steadily. The near drying of raw cashew supply and the difficulty in getting increase in domestic production in the short-run, coupled with emergence of new exporters in the international market indicate another critical situation. However, to keep the wheels of the industry moving, 5 lakh tonnes of raw nuts are necessary. This was needed to motivate the increase in tempo of export and utilise effectively internal production for augmenting exports. The processing industry had its good times all these years. Crisis or no crisis, it needs an action plan to improve the overall performance of the cashew industry.

CATTLE AND POULTRY FEED

Eversince man has started an organised living for the past 10,000 years, animal has remained a best friend, a faithful servant,. dumb slave providing milk, meat and energy/power for agricultural operations, transport and various odd jobs. For all the services to mankind, the livestock flourish on cheaply available grass in pasture, straw crop residue, industrial and household by-products and wastes, thus providing the maximum output with nominal or negligible maintenance.

An average Indian gets around 9 gm of meat per day as against the recommended requirement of 44 g, less than 107 g of milk instead of 180 g, and only 19 eggs per year as compared to 358 eggs which a citizen in western country consumes. Under these circumstances, it is all the more necessary to improve the status of livestock in our country.

To achieve the above mentioned objectives, the animals require proper raring and balanced nutrition, which can be achieved by providing them in concentrated feed formulations accoreing to requirements.

The estimates of milk production and trend show that there is an increase of milk production by 38% between 1972-1982. Based on these by 2000 AD the production of milk in the country would be around 65 million tonnes as against 38 million tonnes during 1984-85.

At this rate the demand for cattle feed is expected to raise from the production of about 8 lakh tonnes to 13.7 lakh tonnes.

To produce 1 kg of milk 0.4 kg of balanced feed is required. This means, to produce 99,000 tonnes of milk/day, the cattlefeed requirement is 40,000 tonnes per day or 15 million tonnes per annum. But whereas India is producing less than 1 million tonne annually.

This clearly indicates that the cattlefeed industry can expand by 15 folds to meet the present demand.

Besides milk, meat and meat products are also gaining importance in recent years. The following table shows the potential growth of meat industry in India

Category	Present Level of Production	Potential of Stepping up Production	Local Consump- tion	Export
Beef	62	65	65	-
Buffalo meat	125	1000	300	700
Sheep & goat meat	305	484	436	48
Pig meat	54	60	60	-
Poultry meat	95	120	120	-
Total	721	1729	981	748

Besides, there is a continuous raise in production of cereals and millets in the country and surplus and waste products is bound to be diverted for cattle and poultry feed.

For the past 20 years the poultry production in India has made a remarkable progress and has transformed itself from a back yard venture to an increasingly sophisticated industry.

India's minimum demand for eggs exceeds more than 1,36,000 million eggs based on intake of half an egg per person per day. The current egg output is less than 10% of minimum potential demand.

Based on various factors, the production of concentrated feeds for cattle and poultry are playing vital role to increase the overall production of milk, meat, eggs to meet the ever-growing demand of this country.

By 2000 AD the total animal feed requirement in India would be 82.61 million tonnes of concentrated feed, 598.80 million tonnes of green fodder, 373 million tonnes of dry fodder and 293 million tonnes of coarse grains.

As regards to animal husbandry in Maharashtra, the total population in respect of cows is 5184000, buffaloes 2309000, sheep 271400, goats 7703000 and poultry 19769000.

The total feed concentrate production is as follows :

Production of Compound Livestock Feed

Quantity - Metric Tonnes

Year	Cattle and Other Feed	Poultry Feed	Total Quantity
1979	428.90	225.70	654.60
1980	549.90	350.20	900.10
1981	590.0	359.30	950.20
1982	618.90	325.30	944.20
1983	663.90	348.90	1012.80

Estimated Feed/Fodder Requirement of the State of Maharashtra

Quantity - Lakh Tonnes

Year	Requirement of Feed and Fodder		
	Green Fodder	Dry Fodder	Concentrate
1980-81	360.25	293.63	36.89
1984-85	382.69	301.12	41.42
2000-01 (Projected)	612.16	349.43	83.75

As per available data, the State percapita availability of milk is 93 gms/day/person against 201 gms as nutritional requirement. The percapita availability of egg is 0.06 egg per person/day against half an egg.

To improve over this, not only by increasing animal/bird population, but by improvised breeding and feeding methods, percapita availability of milk and egg can be enhanced.

Hence there exists a demand for concentrate feed industry.

FISH MEAL

Fish meal is mainly used as an ingredient in cattle and poultry feed. The production of concentrated feed for cattle and poultry are playing a vital role to increase the overall production of milk, eggs and meat to meet the ever-growing demand of this sector.

There are around 86 feed manufacturing units in organised sector. According to Compounded Livestock Feed Manufacturers' Association (CLEFMA), the annual production of cattlefeed in 1983 was 664,000 tonnes valued at Rs.75 crores by the organized sector. By 2000 AD, the estimated total annual feed requirement in India would be 82.61 million tonnes of concentrated feed, 598.80 million tonnes of green fodder, 373 million tonnes of dry fodder and 293 million tonnes of coarse grains. The production of compound livestock feeds have been increasing steadily over the years.

The figures for 1975-83 are as follows :

Year	Cattle and Other Feeds	Poultry Feed ('000 Tonnes)	Total Quantity
1975	275.30	143.90	419.20
1976	313.80	160.50	474.30
1977	401.80	204.20	606.00
1978	428.90	225.70	654.60
1979	517.60	270.40	788.00
1980	549.90	350.20	900.10
1981	590.00	359.30	950.20
1982	618.90	325.30	944.20
1983	663.90	348.90	1012.80

Source : 17th Annual Report, CLEMA

India also exports substantial quantity of fish meal. World exports of fish meal registered a very high growth. Rapid rise in fish meal supporters from Peru and its relatively per unit protein price mainly explain the unusual growth of fish meal exports. India exported around 350 tonnes of fish meal in the year 1984-85 and 1815 tonnes in 1983-84.

Maharashtra with a long coastal line has a rich harvest of sea foods. According to data available, 396800 metric tonnes of fish production showed in the year 1988-89. There are a number of fish/prawn processing centres in Bombay, Ratnagiri, Sindhudurg, Thane, Raigad districts. Apart from good fishes, trash fishes also will be netted during the harvesting period. With this abundance, fish meal industry is a viable one.

Financial Estimate & Economic Feasibility of Recommended Units

MANUFACTURE OF SPICE/MASALA POWDER

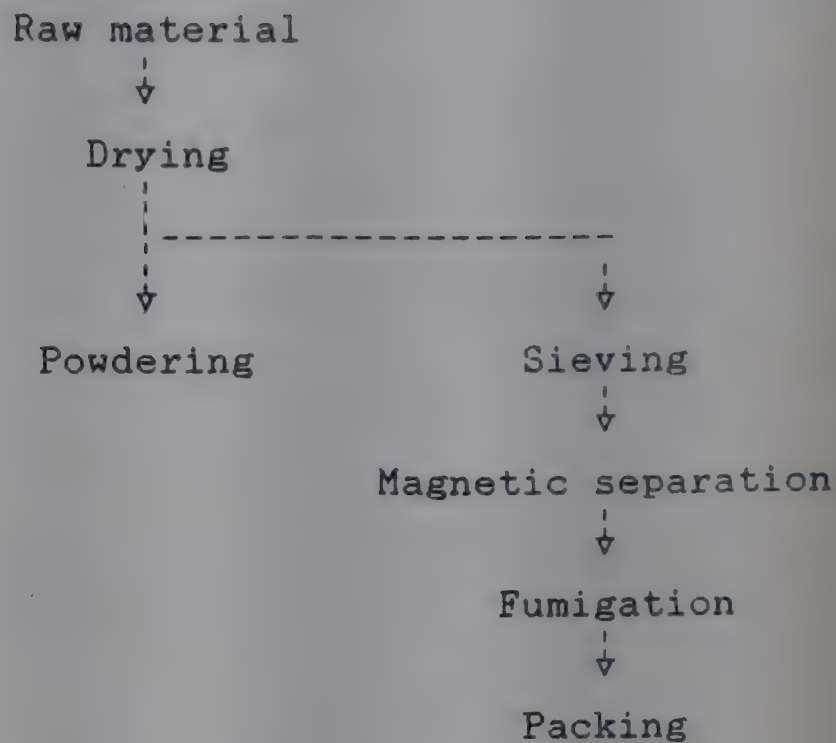
1. Introduction

Spices are important constituents in flavouring food. While India has been the world's largest producer of spices, we also consume a very large proportion of our production. Most of the spices are ground before they are consumed. Ground spices are extensively used in all types of curried dishes in India and abroad. They are used for seasoning of egg, fish, meat, sauces, chutney, pickles, sausages. Ground spices like turmeric powder and chilli powder are used as food colourant apart from their use as flavourings and medicinal applications in pharmaceutical preparations.

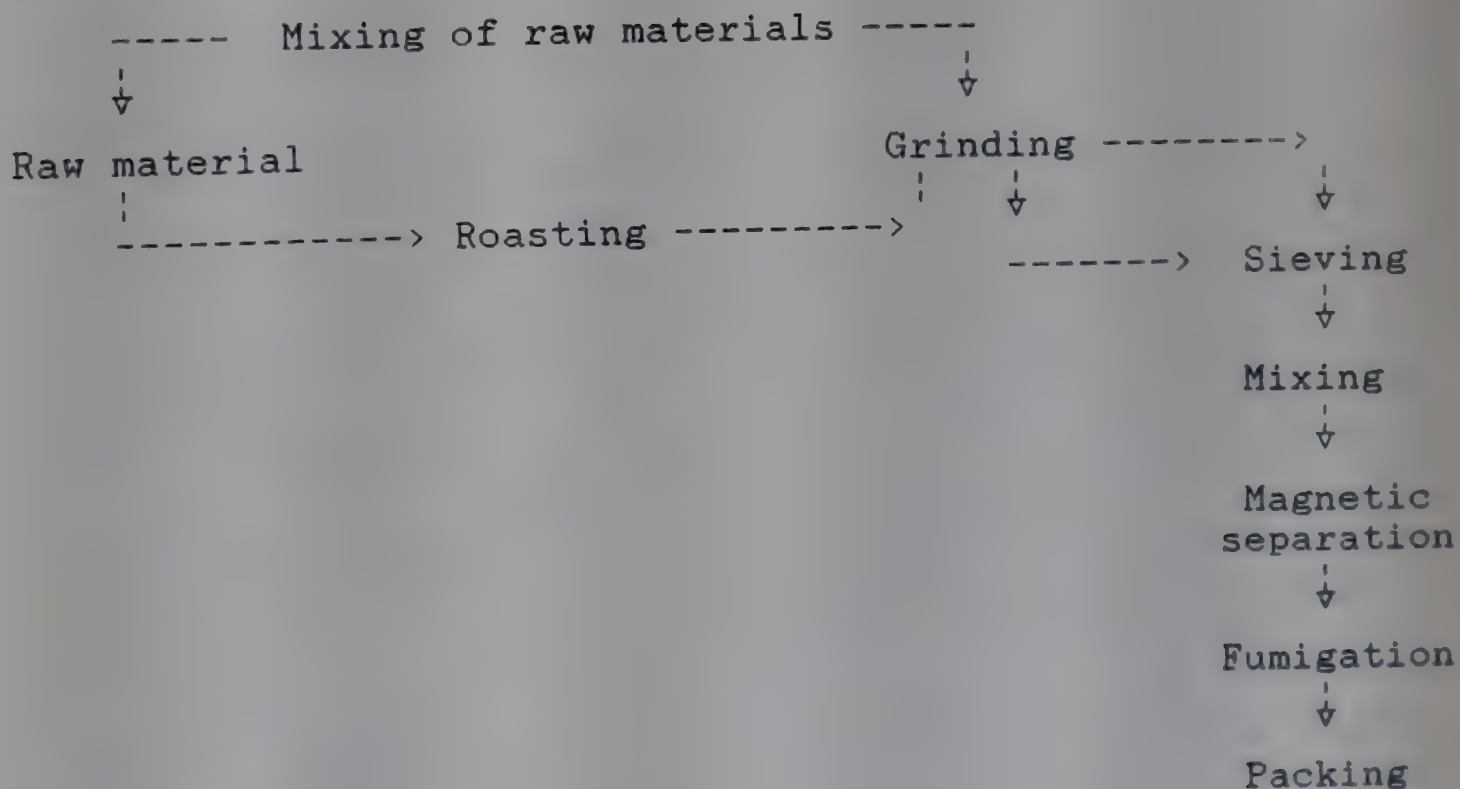
2. Process in brief

The main steps involved in the spice and masala powder preparations are pre-cleaning, drying, grinding, sieving, mixing and packing. The formula varies with the consumer requirements. Taste preferences should be ascertained before marketing.

Spice powder -



Masala powder -



FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	SPICE POWDER (Chilli, Turmeric, Ginger, Garlic, Coriander, etc.)
CAPACITY	5 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	3.75
b. Building	33.75
c. Plant and Machinery	45.75
d. Auxillary Equipment	3.01
e. Miscillanious Fixed assets	0.75
f. Preliminary & preoperative exp	6.25
g. Working capital (Margin)	8.5

TOTAL CAPITAL INVESTMENT	101.76
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[B] PATTERN OF FINANCING

a. Term loan	65.26
b. Equity	36.5
Debt : Equity	1.8

[C] COST OF PRODUCTION

a. Raw material cost	198.96
b. Packaging material cost	28.75
c. Utility cost	44.15
d. Manpower cost	13.85
e. Factory overhead	15.25
f. Administrative expenses	3.15
g. Financial expences	11.55
h. Depriciation cost	12.46
i. Merchandising	16.41

TOTAL COST OF PRODUCTION	344.53
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[D] PROFITABILITY

a. Sales realization	475.25
b. Cost of Production	344.53
c. Gross profit	130.72
d. Taxable income	78.43
d. Net profit	35.29
e. Break even point	35.75

MANUFACTURE OF ENERGY FOOD

1. Introduction

Protein-calorie malnutrition is one of the most important nutritional deficiencies among children in developing countries. It impairs the physical and mental growth of children who suffer from the deficiency in infancy but somehow manage to survive. On account of inadequacy in the intake of proper basal diet supplements like pulses, milk and vegetable, vitamin deficiency disorders are also commonly observed in this group. To combat these deficiency disorders at the early stages, Central and State Governments have launched several nutrition intervention programmes. In these programmes, the supplementary food is designed to make up the deficiency in protein and calorie, and provide the needed vitamins and minerals.

Keeping in view of the above factors Energy Food has been developed. This is an almost ready-to-eat food and does not need extensive cooking at the point of distribution. This food was extensively tried out in the Nutrition Programme of the India Population Project.

2. Raw Materials and Packaging Material

Wheat
Bengalgram dhal
Soya flour
Jaggery
Vitamins and minerals

Polybags and polywooven sacks

3. Process in Brief

The process consists mainly of pre-cleaning all the raw materials, roasting under optimal conditions, powdering them to the required mesh size and ultimate mixing.

The cleaned wheat is continuously fed into a roaster and roasted into golden brown colour, and it also develops a pleasant aroma at this stage. After it is cooled by a blower attached elevator, and once again cleaned and destoned. The destoned cleaned material is ground to the desired mesh size in hammer mills.

The cleaned bengalgram dhal is roasted till it develops a fine aroma. This is then cooled, cleaned, destoned. The destoned dhal is ground in flour mills to the desired mesh size.

Soya flour first roasted in electrical roaster. It is then cooled and ground to desired mesh size.

Jaggery is broken into small bits. It is then mixed with calcium carbonate and some wheat flour and passed through a multi mill to get a coarse flour.

The mix has a pleasant flavour and good acceptability. It can be consumed as such and requires no elaborate cooking as in the case of other available high protein supplements. If desired, it could be mixed with water or milk to make a porridge or paste, which is ready for consumption.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	ENERGY FOOD
CAPACITY	6 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	3.25
b. Building	17.25
c. Plant and Machinery	36.85
d. Auxillary Equipment	5.28
e. Miscillanious Fixed assets	2.35
f. Preliminary & preoperative exp	4.56
g. Working capital (Margin)	7.5
TOTAL CAPITAL INVESTMENT	77.04

[B] PATTERN OF FINANCING

a. Term loan	48.74
b. Equity	28.3
Debt : Equity	1.7

[C] COST OF PRODUCTION

a. Raw material cost	82.12
b. Packaging material cost	12.23
c. Utility cost	6.58
d. Manpower cost	5.45
e. Factory overhead	3.14
f. Administrative expenses	4.26
g. Financial expences	10.55
h. Depriciation cost	5.63
i. Merchandising	0.65
TOTAL COST OF PRODUCTION	130.61

[D] PROFITABILITY

a. Sales realization	142.28
b. Cost of Production	130.61
c. Gross profit	11.67
d. Taxable income	7
d. Net profit	3.15
e. Break even point	56.4

ANIMAL FEED

1. Introduction

The poultry feed industry uses the wide range of raw materials like jowar, ragi, wheat broken, maize, tapioca, rice bran (deoiled), rice bran whole, gram husk (bhusa), deoiled oilseed cakes, wheat bran, wheat husk, fish meal dried fish, silkworm pupae meal, molasses, mineral mixture, etc. to evolve variable formulations to meet the nutritive standards.

Generally raw materials are selected which are locally available at competitive rates, preferably during harvest seasons. It is a pre-requisite in the industry to be as close as possible the market centre to provide feed on a fresh basis and also minimise freight charges, which is a considerable fact on the feed cost.

Improving the feeding efficiency (with the supplement of concentrated feed) can increase the early growth of high weight poultry birds and increase in egg output of poultry.

2. Market Information

According to CLFMA (Compound Livestock Feeds Manufacturers' Association), the annual production of poultry feed in 1983 was 3.49 million tonnes as against 1.83 lakh tonnes during 1972. This demand is picking up sharply and the feed manufacturers are able to utilise the production capacity to the maximum extent.

By 2000 AD the total animal feed (poultry and cattle) requirements in India would be 82.61 Million Tonnes of concentrated feed.

3. Process in Brief

The poultry feed comprises of various formulations such as chickmash, growers mash, layers mash, broiler starter and broiler finisher to meet the requirements for poultry birds.

The flow diagram is as follows:

Raw materials -----> Cleaning -----> Fumigation ----->
 Pulverizing -----> Mixing -----> Molassing -----> Packing

4. Equipments Required

Screw Conveyor, vibroscreen, bucket elevators, hammer mill, suction blower, mixer, injector, aspirators, packaging, weighing and conveying equipments.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	ANIMAL FEED
CAPACITY	40 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	2.87
b. Building	20.96
c. Plant and Machinery	19.83
d. Auxillary Equipment	0.77
e. Miscillanious Fixed assets	0.55
f. Preliminary & preoperative exp	2.11
g. Working capital (Margin)	8.31
TOTAL CAPITAL INVESTMENT	55.4

[B] PATTERN OF FINANCING

a. Term loan	33.74
b. Equity	21.66
Debt : Equity	1.6

[C] COST OF PRODUCTION

a. Raw material cost	164.62
b. Packaging material cost	15.76
c. Utility cost	1.55
d. Manpower cost	1.12
e. Factory overhead	2.07
f. Administrative expenses	0.84
g. Financial expences	8.4
h. Depreciation cost	6.27
i. Merchandising	5.02
TOTAL COST OF PRODUCTION	205.65

[D] PROFITABILITY

a. Sales realization	222.25
b. Cost of Production	205.65
c. Gross profit	16.6
d. Taxable income	9.96
d. Net profit	4.48
e. Break even point	55.33

MANUFACTURE OF n-TRIACONTANOL
(A Plant Growth Regulator)

n-triacontanol has recently shot into prominence as a plant growth promoter. Successful field trials conducted in U.S.A. have proved its efficacy for high yield in the case of number of field crops like barley, corn, rice, tomatoes, maize, lettuce, cucumber, etc. Successful field trials of this compound have been conducted on tea by UPASI Tea Research Institute, Cinchona, Coimbatore. An yield increase to the extent of 20-30% and a reduction in the dormant shoots (banji) have been reported. Similarly field trials have also been carried out in the tea gardens of North Eastern Region.

n-triacontanol has been successfully used for other field crops like rice, tomatoes, potatoes, cauliflower, brinjal, chillies, ribbed gourd, etc. by some Agricultural Universities in India. This compound is very effective in very low concentrations, ie. 1 to 2 ppm per acre (1 mg to 2mg/acre).

Raw Material

Two raw materials used to extract n-triacontanol are :

- a. Tea waste - Black tea waste including stiff sweeping, tea waste from instant tea processing damaged tea decaffeinated tea wax
- b. Sugarcane press mud - Obtained as a waste product during the clarification of sugarcane juice in sugar factories

Process in Brief

Tea wax/sugarcane wax is extracted from tea waste/sugarcane press mud by solvent extraction. The wax is fractionated and purified by precipitation. After transesterification under appropriate conditions, the compound is further purified and fractionally crystallised from suitable organic solvents. The product is tested for the purity by thin layer chromatography (TLC).

Power requirement - 30 H.P.

Manpower employment potential - 6 persons

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	n-TRIACONTANOL
CAPACITY	6 0 KGs PER ANNUM
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	0.65
b. Building	3.9
c. Plant and Machinery	3.2
d. Auxillary Equipment	1.25
e. Miscillanious Fixed assets	0.35
f. Preliminary & preoperative exp	0.85
g. Working capital (Margin)	1.5

TOTAL CAPITAL INVESTMENT	11.7
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[B] PATTERN OF FINANCING

a. Term loan	7.01
b. Equity	4.69
Debt : Equity	1.5

[C] COST OF PRODUCTION

a. Raw material cost	1.72
b. Packaging material cost	0.75
c. Utility cost	0.75
d. Manpower cost	1.21
e. Factory overhead	0.56
f. Administrative expenses	0.35
g. Financial expences	3.05
h. Depriciation cost	0.95
i. Merchandising	0.93

TOTAL COST OF PRODUCTION	10.27
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[D] PROFITABILITY

a. Sales realization	13.65
b. Cost of Production	10.27
c. Gross profit	3.38
d. Taxable income	2.03
d. Net profit	0.91
e. Break even point	38.85

DHAL MILL

1. Process : Milling of pulses
2. Product & By-products : Dhal, Husk, Broken/Powder
3. Current Status & Future Potential

The production of pulses in India is of the order of 11 million tonnes per year. Most of the produce is converted to Dhal by the traditional process, which is both time consuming and wasteful in nature, and the techniques adopted vary from place to place with minor variations in processing methods or machinery used.

In traditional practice, pulses are dried in the sun after treatment with oil and/or water for loosening the husk which is completely dependent on climatic conditions and takes about 2-5 days for completion. This poses problems during rainy and winter months. The dehulling of inadequately dried pulses is poor resulting in heavy processing loss. The next step of removal of husk and splitting into dhal is accomplished by power driven chakkis or by roller mills. Chakkis crush the grain producing large amount of brokens while rollers scour the grain surface and cause powdering. Under unfavourable drying conditions the grains may have to pass through the machines several times. Average yields of 65-74% of dhal have been reported in traditional mills as against 80-84% that could be obtained under optimum conditions.

4. CFTRI Process

A new and simple technique for milling of pulses has been developed at the Institute, which can give yields of 80-85% of dhal in lesser time and at lesser processing cost compared to

traditional processes. Besides the increase in the yield the process is capable of operation throughout the year and is completely independent of climatic conditions.

5. Process in Brief

A conditioning technique of heat treatment and moisture adjustment of the cleaned, size graded grains in specifically designed units loosens the husk, while making it friable and brittle, and the kernel becomes hard. This is a continuous operation replacing sun drying step and carried out indoors. The loosened husk is removed by machines to suit the nature and milling characteristics of the pulse. These machines work either on abrasion or attrition principle and gives highest dehusking (93-100%) in a single operation. Splits or dehusked whole pulse obtained from the dehusking machines are cleaned and graded. If need be the dehusked whole grains can be split under appropriate conditions using suitable units as is done in the case of Tur (Arhar). Processing condition, sequence of operations and machines to be used have been standardised for common pulses like Tur, Bengal gram, Green gram and Black gram, as also for less common pulses like soyabean, kidney beans, lentil, cow pea, horsegram, etc.

Plants of 1/2, 1 and 2 tonnes per hour capacities are in operation in different regions.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	DAL MILL
CAPACITY	16 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	1.25
b. Building	3.75
c. Plant and Machinery	5.15
d. Auxillary Equipment	0.83
e. Miscillanious Fixed assets	1.21
f. Preliminary & preoperative exp	1.65
g. Working capital (Margin)	10.35
TOTAL CAPITAL INVESTMENT	24.19

[B] PATTERN OF FINANCING

a. Term loan	9.14
b. Equity	15.05
Debt : Equity	0.6

[C] COST OF PRODUCTION

a. Raw material cost	120.55
b. Packaging material cost	1.5
c. Utility cost	1.5
d. Manpower cost	1.8
e. Factory overhead	1.25
f. Administrative expenses	1.35
g. Financial expences	3.25
h. Depriciation cost	1.15
i. Merchandising	1.25
TOTAL COST OF PRODUCTION	133.6

[D] PROFITABILITY

a. Sales realization	162.55
b. Cost of Production	133.6
c. Gross profit	28.95
d. Taxable income	17.37
d. Net profit	7.82
e. Break even point	36.82

CEREAL FLAKES

For promoting wider consumption of cereal flakes by reducing the processing cost and to make the product more hygienic, the Institute has developed a process for making cereal flakes. One aspect of the work is improvement of the small scale traditional process by altering the process conditions with regard to roasting and addition of rollers to the existing edge runner machine. The other aspect of the work relates to complete mechanization of the whole process/including soaking, roasting, shelling, polishing, flaking and drying. The yield of cereal flakes by the improved process is about 5 to 6% higher than in the traditional process.

The equipment required for cereal flakes process are Elevators, Soaking Tanks, Hot Water Boiler, Cleaner-cum-Destoner, Roaster, Vibratory Sifter, Sheller-cum-Aspirators, Cone Polisher, Flaker, Grader and Vibrofluid Drier. (A prototype design of roller flaker is now available under a separate licence from CFTRI).

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	CEREAL FLAKES
CAPACITY	5 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	0.5
b. Building	5.22
c. Plant and Machinery	8.76
d. Auxillary Equipment	1.01
e. Miscillanious Fixed assets	0.28
f. Preliminary & preoperative exp	1.11
g. Working capital (Margin)	2.14

TOTAL CAPITAL INVESTMENT 19.02

[B] PATTERN OF FINANCING

a. Term loan	11.83
b. Equity	7.19
Debt : Equity	1.6

[C] COST OF PRODUCTION

a. Raw material cost	27.02
b. Packaging material cost	2.35
c. Utility cost	7.79
d. Manpower cost	1.55
e. Factory overhead	0.82
f. Administrative expenses	0.82
g. Financial expences	2.98
h. Depriciation cost	1.14
i. Merchandising	1.03

TOTAL COST OF PRODUCTION 45.5

[D] PROFITABILITY

a. Sales realization	53.75
b. Cost of Production	45.5
c. Gross profit	8.25
d. Taxable income	4.95
e. Net profit	2.23
	47.2

RICE MILL

1. Process : Milling of Paddy
2. Products and By-products : Polished Rice, Rice Bran, Paddy Husk
3. a) Present Status

India is the second largest producer of rice in the world. The mechanised sector of rice milling industry handles more than 45 million tonnes of paddy annually. While about 10-15 million tonnes are processed through large scale modern mills, the major portion of the paddy is being processed through hullers.

The hullers are usually low capacity mills. The yield of rice in huller mills is about 5% less than that obtained in modern mills in case of raw paddy and 2% less in case of parboiled paddy. In these hullers, both shelling and polishing operations are carried out simultaneously, there is no control on the polishing of rice, impure bran admixed with husk is obtained and a higher breakage of rice occurred.

b) Future Potential

It is very necessary to have control over yield of head rice which is now being lost in the form of broken. For this a reduction in severity of milling treatment is imperative. It is found necessary to carry out the shelling and polishing in two separate units.

Keeping in view these factors, a mini rice mill has been designed and developed. The mini rice mill consists of a paddy cleaner sheller, separator and a polisher. The separator is a compact unit designed on the densimetric classification principle.

The polisher could be either a vertical cone polisher or a horizontal rotor polisher. Even a huller used for mill-ing could serve as a polisher through there may be more breakage of rice.

The salient features of the Mini Rice Mill are :

1. 1-4% extra yield of head rice depending on variety
2. Production of pure rice bran free from husk
3. Control over degree of polishing from 3% onwards
4. Capacity of 500 kg of paddy/hr is ideally suited to rural sector as a small scale venture.

The compactness of the unit, its low cost and the above advantages should enable installation of a number of units in all the paddy growing centres and should result in production of higher yield of head rice for the consumer.

c) By-products Utilization

The important by-product, rice bran is a source of valuable edible oil. The solvent extraction industry is well established in the country and commercial rice bran oil is being produced. If the available rice bran can be stabilised and used for extraction, edible oil can be manufactured. Paddy husk finds use as fuel in making hard board and activated carbon.

4. Equipment and Availability

The components mainly are paddy cleaner, sheller, separator and polisher. All are available indigenously and the units can be got fabricated or are available with fabricators.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	MODERN RICE MILL
CAPACITY	96 TONS OF PADDY PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	4.01
b. Building	76.36
c. Plant and Machinery	73.27
d. Auxillary Equipment	2.18
e. Miscillanious Fixed assets	9.05
f. Preliminary & preoperative exp	12.27
g. Working capital (Margin)	36.26
TOTAL CAPITAL INVESTMENT	213.4

[B] PATTERN OF FINANCING

a. Term loan	123.65
b. Equity	89.75
Debt : Equity	1.4

[C] COST OF PRODUCTION

a. Raw material cost	402.63
b. Packaging material cost	20.15
c. Utility cost	7.8
d. Manpower cost	5.86
e. Factory overhead	7.79
f. Administrative expenses	2.73
g. Financial expences	27.59
h. Depriciation cost	10.33
i. Merchandising	2.25
TOTAL COST OF PRODUCTION	487.13

[D] PROFITABILITY

a. Sales realization	585.15
b. Cost of Production	487.13
c. Gross profit	98.02
d. Taxable income	58.81
d. Net profit	26.46
e. Break even point	49.85

COLD STORAGE OF FRUITS AND VEGETABLES

1. / Introduction

The fruits and vegetable offer more storage problems than any other foodstuff because it is physiologically active. Any effort in the direction of extending their storage life and conservation of these precious protective foods are of paramount national interest.

Refrigeration is considered an ideal method for prolonging the storage life of fruits and vegetables. The seasonal nature of fruits and vegetables, results in glut and scarcity situations, which can be overcome by frozen storage to get maximum return on it. Varied agro-climatic conditions in the country coupled with the wide distribution of packets of production and areas of consumption necessitates the application of scientific conservation techniques and storage under low temperatures acquires tremendous significance in order to ensure equitable distribution, increased availability, economic returns to the farmer and reasonable price to the consumer.

The scope for setting up modern cold storage has quite high in view of the continued increased in the production of vegetables and fruits, and on account of an appreciable change in the outlook of many growers, who now prefer to store their product at low temperatures for better returns and the new generation of consumers who value sophistication and convenience at a reasonable price.

The storage life of fresh fruits and vegetables is governed to a greater extent by the following factors:

- Prevailing climatic conditions and cultural practices of the region
- Variety and stage of maturity at harvest
- Incidence of infection at the time of harvest
- Method of picking, handling and extent of damage prior to storage
- Time interval between harvesting and storage at low temperature
- Rate of cooling
- Storage temperature, RH, aeration and ventillation
- Rate of accumulation of CO₂ concentration in the storage chamber
- Prepacking, treatment, size of package, quantity per package
- Air distribution system in the chamber
- Sanitary conditions in the cold store
- Utilization of storage space for storage of assorted commodities or for one
- Leakage of refrigerant in the chamber

2. /Scientific Cold Storage Practices

The cold storage is a vital link between a producer or a grower and the economy of the agricultural production and employment. The good storage results not only by building well planned cold storage with good insulation and well-laid machinery and equipments but also by application of appropriate scientific management, storage and transportation to produce. The main

business of the cold storage is to receive the commodity fairly in good condition; store it without losing its freshness and flavour and deliver it back to the depositor in good order and condition whenever necessary. The nature of the commodity being perishable warrants careful handling; knowledge of the commodity and the scientific and technical knowledge of its storage. In order to achieve good results, proper inspection, supervision and management of the cold storage operation are required and hence the services of the trained personnel become imperative.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	COLD STORAGE
CAPACITY	1000 TONS
WORKING	365 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	3.25
b. Building	40.05
c. Plant and Machinery	42.17
d. Auxillary Equipment	4.83
e. Miscillanious Fixed assets	5.16
f. Preliminary & preoperative exp	9.13
g. Working capital (Margin)	4.25

TOTAL CAPITAL INVESTMENT 108.84

[B] PATTERN OF FINANCING

a. Term loan	71.6
b. Equity	37.24
Debt : Equity	1.9

[C] COST OF PRODUCTION

a. Raw material cost	0
b. Packaging material cost	0
c. Utility cost	3.91
d. Manpower cost	1.21
e. Factory overhead	3.95
f. Administrative expenses	0.55
g. Financial expences	10.22
h. Depreciation cost	7.16
i. Merchandising	0

TOTAL COST OF PRODUCTION 27

[D] PROFITABILITY

a. Sales realization	30.25
b. Cost of Production	27
c. Gross profit	3.25
d. Taxable income	1.95
d. Net profit	0.88
e. Break even point	60.75

FRUIT AND VEGETABLE PROCESSING UNIT

1. Introduction

Fruits and vegetables are an important nutritional requirement for the people as they not only meet the needs to some extent but also supply vitamins and minerals which improve the quality of the diet. Most of the fruits and certain vegetables produced in the country are a sizeable portion of the seasonal surpluses goes to waste due to improper pre-packaging, handling, distribution and marketing. Therefore, if these losses are to be prevented and seasonal surpluses made available for human consumption export should be made to preserve atleast a part of these surpluses for consumption during the lean periods.

2. Canning of Mango Pulp

Fully ripe mangoes of suitable pulpy variety are selected and washed in water. The fruits are cut into slices and passed through pulper. The pulp is collected and the pH is adjusted. The Brix is also adjusted according to buyer's specifications. The pulp is then heated and filled hot into cans, sealed and processed in boiling water, cooled and stored.

3. Canning of Guava Pulp

Fully ripe white fleshed Allahabad variety of guavas are selected. They are lye-peeled and washed. The black deposit is further removed by scrubbing and then thoroughly washed in plain water. The peeled fruits are then dipped in citric acid solution and then washed in plain water again. The peeled fruits are then

cut into halves or quarters and the seed cavity removed using spoon shaped knives. The slices are then further cooled in a steam jacketted kettle till they are sufficiently softened and then passed through a pulper. The pulp thus obtained is mixed with citric acid to reduce the pH to below 4.0 and their Brix raised to a level by addition of sugar according to the buyer's specification. The pulp is then heated filled hot into plain cans, sealed and processed in boiling water. The cans are cooled, wiped dry, labelled, cased and stored in a cool flame.

4. Jams, Jellies and Marmalades

Jam: Good quality ripe fruits are selected and washed with water. They are then peeled and cut into small bits. The small bits are used directly or they can be washed further and strand in a sieve according to choice.

The cut fruit/pulp is then transferred to a S.S. container and heated just to soften the fruit. Then sugar is added to this mass and heated further until the mass becomes thick in consistency.

Jelly: It is a product prepared by boiling clear fruit extract with sugar and boiling the mixture to a stage at which it will set to a clear jel. A perfect jelly should be transparent. Pectin sugar and acid in proper proportions are important for the preparation of quality jelly.

Marmalade: Marmalade is a fruit jelly in which the slices of the fruit or peel are suspended. The term generally is associated with the produce made from citrus fruits like oranges

and lemons in which shredded peel is included as suspended material.

5. Tomato Paste

Fully ripe and red tomatoes are selected and washed in water. They are crushed coarsely and then crushed mass passed through pulper with de-seeded. The juice is then concentrated to obtain 28° Brix tomato paste. The prepared paste is heated and filled hot into cans and processed in boiling water and cooled. Alternatively the paste is mixed with suitable preservatives and filled into bulk HDPE containers or jars.

6. Fruit Juice Concentrate

Using the concentrator facilities other juices like pineapple, grape, orange can be concentrated and packed according to the requirements.

7. R.T.S. Beverage Fruit-Based

A variety of fruit drinks depending on the different types of fruits available can be manufactured and opting more or less with the same manufacturing facilities. The most popular and acceptable types include mango, pineapple, grapes, orange and guava. The raw material required for fruit drinks are: Sugar, Acidulants, Fruit pulp/juice, Colour, Preservative and Water.

7. Machinery Required

Fruit washer, fruit mill, fruit pulper, holding tanks, pasteurizer, hydraulic press, evaporator, steam jacketted kettles, retorts, can cooler, can form & seamer, boiler, genset, etc.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	FRUIT & VEGETABLE PROCESSING COMPLE
CAPACITY	1700 TONS OF FRUIT PRODUCTS/ANNUM
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	3.35
b. Building	38.59
c. Plant and Machinery	41.14
d. Auxillary Equipment	23.46
e. Miscellaneous Fixed assets	10.55
f. Preliminary & preoperative exp	19.7
g. Working capital (Margin)	9.6

TOTAL CAPITAL INVESTMENT 146.39

[B] PATTERN OF FINANCING

a. Term loan	87.82
b. Equity	58.57
Debt : Equity	1.5

[C] COST OF PRODUCTION

a. Raw material cost	100.02
b. Packaging material cost	100.57
c. Utility cost	20.52
d. Manpower cost	9.56
e. Factory overhead	7.03
f. Administrative expenses	3.27
g. Financial expences	16.34
h. Depreciation cost	17.83
i. Merchandising	5.5

TOTAL COST OF PRODUCTION 280.64

[D] PROFITABILITY

a. Sales realization	326.55
b. Cost of Production	280.64
c. Gross profit	45.91
d. Taxable income	27.55
d. Net profit	12.4
e. Break even point	49.51

POULTRY DRESSING PLANT

1. Introduction

The poultry production has become a full-fledged agro-based industry with a total investment of Rs.1000 crores. Over the last 15 years, there is a phenomenal growth in broiler production. The rate of growth of poultry industry is faster than that of other sectors of food industry. If the present trend continues, it will be the single largest source of animal food in our diet. It is anticipated that poultry products including eggs will contribute 37% of the requirement in the country by 2010 AD. At present almost entire quantity of poultry meat is sold as fresh, unchilled meat. There continues to be an extensive trade in sale of live poultry and there is a sizable market for live and dressed meat. This scenario is now gradually giving way to organise poultry dressing operations in intensive poultry growing belt. The most compelling reason for modernisation is to improve labour productivity and implementation of regulatory measures to ensure hygienic products. The basic factors to be considered while starting poultry dressing plant are, supply of live birds, capital needs, plant location, availability of skilled labour, regulatory measures regarding hygienic production and recommended standards. The units ranging from 50 birds/hr to 1000 birds/hr have been existing. A plant slaughtering 1000 birds/day is well suited for an urban centre like an industrial town or district head quarters with population about 5 lakhs.

2. Processing

Processing involves the following steps :

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Procurement of birds ----> Ante-mortem inspection ----> Slaughter
                                                                |
                                                                v
Post-mortem inspection <--- Evisceration <--- Singeing <--- Scalding
                                                                |
                                                                v
Chilling ----> Cut-up poultry ----> Packaging
  
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FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	POULTRY DRESSING UNIT
CAPACITY	1000 BIRDS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	0.59
b. Building	5.52
c. Plant and Machinery	6.95
d. Auxillary Equipment	1.24
e. Miscellaneous Fixed assets	3.46
f. Preliminary & preoperative exp	2.84
g. Working capital (Margin)	1.42
TOTAL CAPITAL INVESTMENT	22.02

[B] PATTERN OF FINANCING

a. Term loan	13.32
b. Equity	8.7
Debt : Equity	1.5

[C] COST OF PRODUCTION

a. Raw material cost	56.25
b. Packaging material cost	0.76
c. Utility cost	0.63
d. Manpower cost	2.04
e. Factory overhead	0.58
f. Administrative expenses	1.04
g. Financial expences	2.69
h. Depreciation cost	2.54
i. Merchandising	0.67
TOTAL COST OF PRODUCTION	67.2

[D] PROFITABILITY

a. Sales realization	75
b. Cost of Production	67.2
c. Gross profit	7.8
d. Taxable income	4.68
d. Net profit	2.11
e. Break even point	45.04

FRESH FRUIT CLEANING, GRADING AND PACKAGING

1. Introduction

Fresh fruits and vegetables being highly perishable have to be either processed or consumed very fast to avoid the losses due to wastage. If fresh fruits and/or vegetables at or near the harvesting centre are collected, cleaned to remove dirt, surface microflora and spoiled portions, and graded according to weight/size and the weighed quantities packed in assorted consumer packs, the commodities will be available to the consumer in the fresh form in an attractive and convenient form and also the producer will get the reasonable returns with minimum possible losses due to spoilage/wastage. These type of Centres can handle capacity from 1 ton fresh fruit and vegetable (Manual operations, without cold storage facilities) upto 10 tonne material with mechanised operations.

The unit will pack the seasonal fruits and vegetables and immediately supply to the market centres. Sales realization of good sold will be very quick.

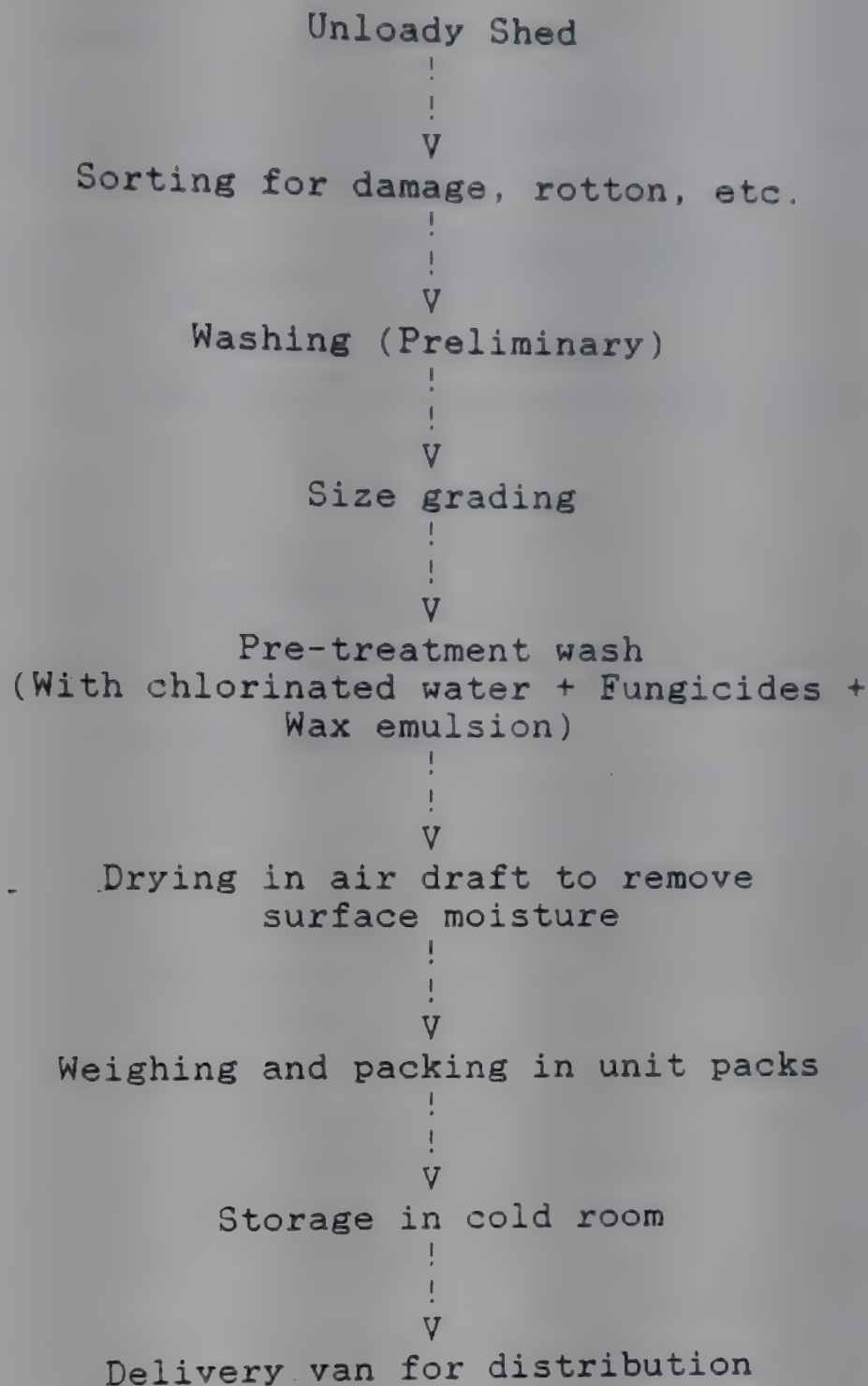
For smaller units involving all manual operations, investment will be as low as Rs.10,000 and with daily expected returns from the goods sold, it will invite the interest of farmers manufacturing these commodities.

2. Raw Material

Vegetables : Potato, onion, cabbage, cauliflower, tomato, brinjal
bittlegourd, okra, palak, methi, peas, green
chillies, coriander leaves, etc.

Fruits : Orange, banana, apple, guava, lime, ber, grapes

3. Process Flow Sheet



3. Process

- a. Fresh fruits and vegetables receiving
- b. Grading for quality, size and weighing
- c. Pre-washing to remove dust-dirt in the pre-washing tank
- d. Through washing by spray rinse
- e. Pre-treatment (Chlorine wash or fungicide wash) in pre-treatment tank
- f. Wax coating for oranges and other fruits

- g. Drying in air draft
- h. Cold storage for pre-cooling and storage to hold the surplus material for short duration
- i. Packing (Consumer pack in polypropylene bags or cardboard cartons and wooden crates, etc. for transportation)
- j. Transportation in specially designed delivery vans to retail shops

4. Plant and Equipments Required

Washing tanks, sorting conveyor, size grading machine, hot air tunnel, cold storage facility, etc.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	FRESH FRUIT CLEANING, GRADING & PAC CENTRE WITH COLD STORAGE FACILITY
CAPACITY	10 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	4.66
b. Building	38.65
c. Plant and Machinery	34.68
d. Auxillary Equipment	8.52
e. Miscillanious Fixed assets	3.65
f. Preliminary & preoperative exp	5.52
g. Working capital (Margin)	2.55
TOTAL CAPITAL INVESTMENT	98.23

[B] PATTERN OF FINANCING

a. Term loan	67.62
b. Equity	30.61
Debt : Equity	2.2

[C] COST OF PRODUCTION

a. Raw material cost	75.15
b. Packaging material cost	12.6
c. Utility cost	2.56
d. Manpower cost	1.15
e. Factory overhead	1.45
f. Administrative expenses	1.25
g. Financial expences	5.65
h. Depreciation cost	12.87
i. Merchandising	0.56
TOTAL COST OF PRODUCTION	113.24

[D] PROFITABILITY

a. Sales realization	125.55
b. Cost of Production	113.24
c. Gross profit	12.31
d. Taxable income	7.39
d. Net profit	3.33
e. Break even point	52.18

DEHYDRATION OF FRUITS & VEGETABLES

1. Introduction

Convenience foods are becoming increasingly popular with consumers. The terms "Instant" and "Quick Cooking" are by words in modern advertisements relating to food.

From time immemorial, man has tried to preserve and store foods from seasons of plenty to lean seasons. Drying of foods (perishable) in order to preserve them during seasons of abundance for making them available during off-seasons and seasons of shortage has been an ancient traditional art. The enormous logistic problems encountered in World War-II had a profound influence on the preservation of foods by dehydration.

Dehydration as the term implies is the removal of water under controlled conditions of humidity and temperature without impairing the nutrient content and palatability. The main advantages of the process are :

1. Reduction in weight and volume to facilitate easy and economical packaging, transportation, warehousing and distribution
2. Easy-to-pack in any size of supply and less susceptible to variations in climate
3. Long storage life
4. Easy-to-cook
5. Adequate nutrition; and
6. Availability at all times of the year.

2. Scope

Potato, capsicum, beans, carrot, tomato, sweet potato, bhindi (okra), onions, garlic, cabbage, cauliflower and greens among vegetables and mango, banana, grapes, sapota and papaya among fruits are identified as the raw materials for dehydration. In principle food needs to be preserved, as otherwise spoilage occurs due to either bacteriological and fungal growth or enzymatic or chemical reactions. Dehydration is beginning to emerge as the major method of food preservation as it offers several advantages over other methods of preservation. Properly dehydrated food products on rehydration are restored as nearly as possible to their original state.

4. Process Description

The general procedure for dehydration of vegetables consists of the following steps :

The vegetables are subjected to preliminary washing. The washed materials are peeled and then soaked in water containing 0.1% potassium meta-bisulphite (KMS). In the case of vegetables where green colour is to be retained as in the case of peas, chillies, beans, etc. 2% sodium carbonate solution is used for retention of green colour. The soaked vegetables are then trimmed, diced, blanched in boiling water with 0.1% KMS for 3-5 minutes. After cooling for a while the blanched vegetables are loaded into trays and kept for drying in hot air driers at 60-80°C. The drying time varies for the various vegetables. The dried vegetables are packed in tins (bulk) and in laminated foils (Unit packing)

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT DEHYDRATION OF FRUITS & VEGETABLES

CAPACITY 4 TONS OF RAW MATERIAL PER DAY

WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	0.65
b. Building	7.54
c. Plant and Machinery	14.21
d. Auxillary Equipment	2.31
e. Miscellaneous Fixed assets	0.3
f. Preliminary & preoperative exp	2.74
g. Working capital (Margin)	2.45

TOTAL CAPITAL INVESTMENT 30.2

[B] PATTERN OF FINANCING

a. Term loan	18.76
b. Equity	11.44
Debt : Equity	1.6

[C] COST OF PRODUCTION

a. Raw material cost	18.57
b. Packaging material cost	1.62
c. Utility cost	8.65
d. Manpower cost	3.54
e. Factory overhead	1.71
f. Administrative expenses	1.87
g. Financial expences	2.04
h. Depreciation cost	4.09
i. Merchandising	0.42

TOTAL COST OF PRODUCTION 42.51

[D] PROFITABILITY

a. Sales realization	48.65
b. Cost of Production	42.51
c. Gross profit	6.14
d. Taxable income	3.68
d. Net profit	1.66
e. Break even point	57.04

CASHEWNUT PROCESSING

1. Introduction

Cashew tree, is an erect spreading evergreen tree growing to a height of about 14 meter with a spurious fruit botanically. The fruit portion is known as cashew apple and has a kidney shaped nut attached to it. The nut will be greenish grey in colour. The nut is thick and cellular and contains an acrid oily juice which is powerfully corrosive. It encloses the endosperm, white kernel (about 30% of the nut) covered by a thin reddish brown skin or testa.

2. Market information

The kernels possess pleasant taste and flavour. They are eaten either raw or fried and are sometimes salted or sugared and have found favourable particularly in USA as dessert. They are also used in large quantities by sweetmeat dealers and confectioners. They constitute a highly nutritious and concentrated food. Their composition is very similar to that of sweet almonds. They contain moisture 5.9, proteins 21.2, fats 46.9, carbohydrates 22.3, mineral matter 2.4, calcium 0.05, phosphorous 0.45%, iron 0.5 mg and calorific value 596/100 g.

Although cashewnuts were produced extensively in East Africa and Brazil, India enjoyed a dominant share in the international trade in processed cashew kernels. Concerted efforts in enhancing the cropped area under cashew has started bearing fruit and non-traditional areas in Orissa, West Bengal, Bihar, North Eastern States, Adhra Pradesh have emerged as sources

of supply. Home production not being sufficient raw nuts from Africa and even from Brazil are imported into India for processing purpose. The all India production of raw cashewnuts for 1986 has been estimated at around 160,000 tonnes. Indian exports of cashew kernels in 1985 totalled 38,123 tonnes. The unit average export price for January to September 1986 was Rs.75.99 per kg as against Rs.56.01 per kg previous crop year. The major destinations of Indian Exports are USSR, USA and the Middle East.

3. Sales Promotion and Marketing Strategy

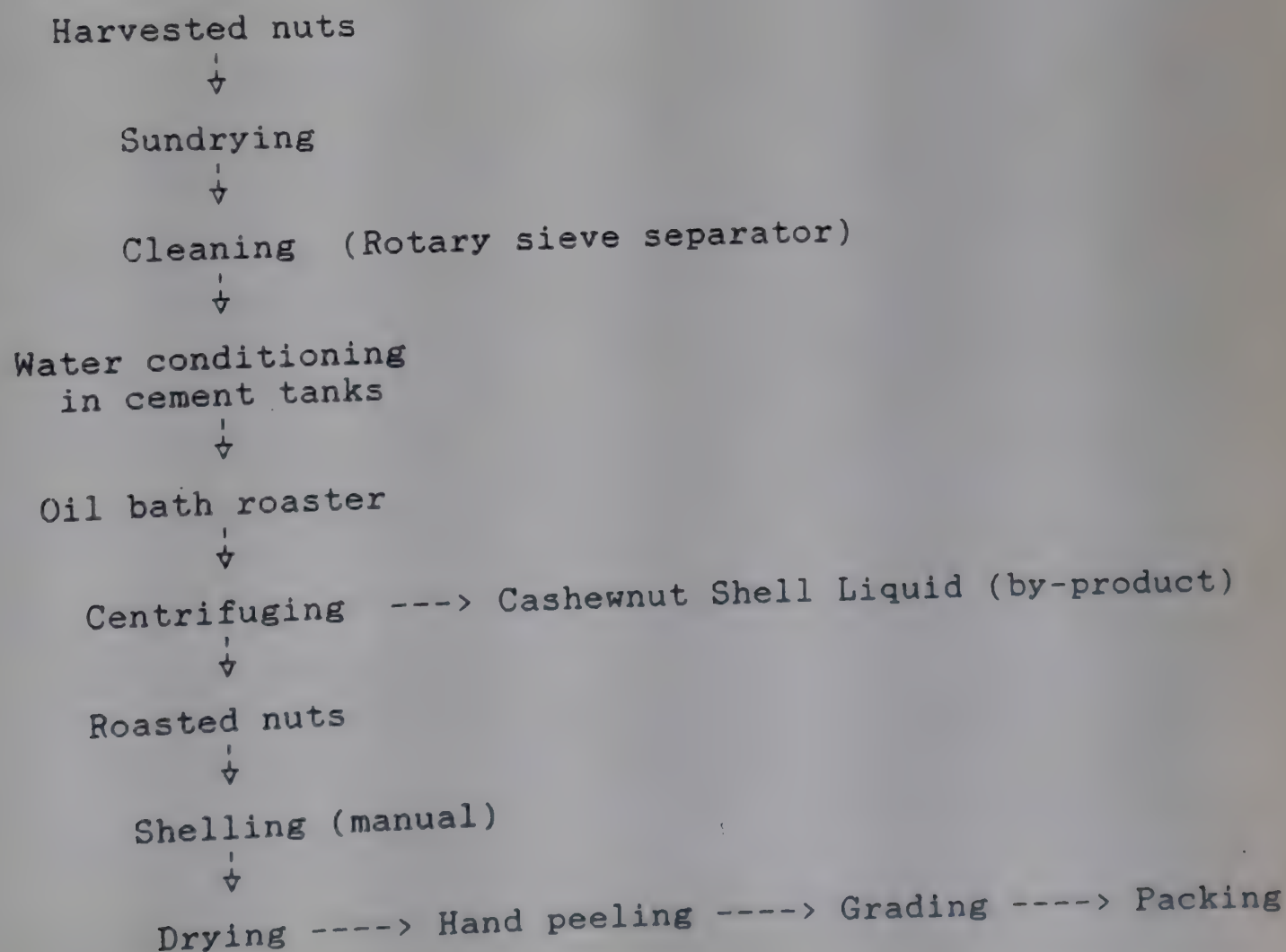
In food industry, there is a necessity of incurring quite a substantial amount of funds for sales promotion, which may include publication of pamphlets, technical literatures, advertisements and publicity in all important media, etc. These expenses need funding by the financing Institutions, both term-lending and short-term lending Institutions and they should accept in principle that these expenses constitutes an important component of the project cost and these expenses can be capitalised and hence funding is justified. Though the cost of the project of the present profile does not include this, an amount of Rs.2.90 lakh should be included in the project cost. While OSFC appraising the project and provide atleast 75% of this amount as the term loan on softer terms. This aspect of financing the initial sales promotion expenses must be accepted in principle for financing, without which no food based industry that too located in a backward State, where the market for such products are of limited size, can survive and attain operational efficiency and stability.

4. Raw material and packaging

Raw nuts	Square tins - 18 lt. cap.
Carbon dioxide	Corrugated Fibreboard boxes

5. Process in brief

The harvested nuts are dried in the sun and stored. The dried nuts are cleaned to remove stones, twigs, etc., in a rotary sieve separator. The cleaned nuts are water conditioned in cement tanks. The conditioned nuts are subject to roasting in an oil bath roaster and finally centrifuged to get roasted nuts and oil (by-product) separately. The roasted nuts are shelled manually. The shelled kernels are dried in a drier at 70°C for about 4-5 hr. The dried products thus obtained is hand peeled and graded. The finished product is packed in 4 gallon (18 lt) tins in carbon dioxide atmosphere.



FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	CASHEWNUT PROCESSING
CAPACITY	5 TONS PER DAY
WORKING	200 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	2.5
b. Building	7.09
c. Plant and Machinery	10.13
d. Auxillary Equipment	1.2
e. Miscillanious Fixed assets	0.42
f. Preliminary & preoperative exp	3.5
g. Working capital (Margin)	9.17
TOTAL CAPITAL INVESTMENT	34.01

[B] PATTERN OF FINANCING

a. Term loan	16.01
b. Equity	18
Debt : Equity	0.9

[C] COST OF PRODUCTION

a. Raw material cost	150.02
b. Packaging material cost	6.72
c. Utility cost	2.16
d. Manpower cost	1.81
e. Factory overhead	1.52
f. Administrative expenses	1.02
g. Financial expences	10.15
h. Depriciation cost	3.02
i. Merchandising	8.82
TOTAL COST OF PRODUCTION	185.24

[D] PROFITABILITY

a. Sales realization	209.5
b. Cost of Production	185.24
c. Gross profit	24.26
d. Taxable income	14.56
d. Net profit	6.55
e. Break even point	48.05

MANUFACTURE OF DESICCATED COCONUT

1. Introduction

About 75% of the total production of coconut goes for copra production and further conversion into oil and the remaining 25% being used up for the production of desiccated coconut and other culinary uses in the raw state. Desiccated coconut is mainly used in the manufacture of sweets, cake dressings, pastries, chocolates and biscuit industry. It is also used in curries and puddings in place of raw coconut or copra.

2. Market information

The estimated total requirement of desiccated coconut in the country is about 8000 tonnes. The current production in the country is about 4000 tonnes only and hence there is a gap of 4000 tonnes per annum. With the introduction of a variety of convenience foods and fast food chains, the demand is likely to increase in a faster pace.

3. Sales Promotion and Marketing Strategy

In food industry, there is a necessity of incurring quite a substantial amount of funds for sales promotion, which may include publication of pamphlets, technical literatures, advertisements and publicity in all important media, etc. These expenses need funding by the financing Institutions, both term-lending and short-term lending Institutions and they should accept in principle that these expenses constitutes an important component of the project cost and these expenses can be capitalised and hence funding is justified. Though the cost of

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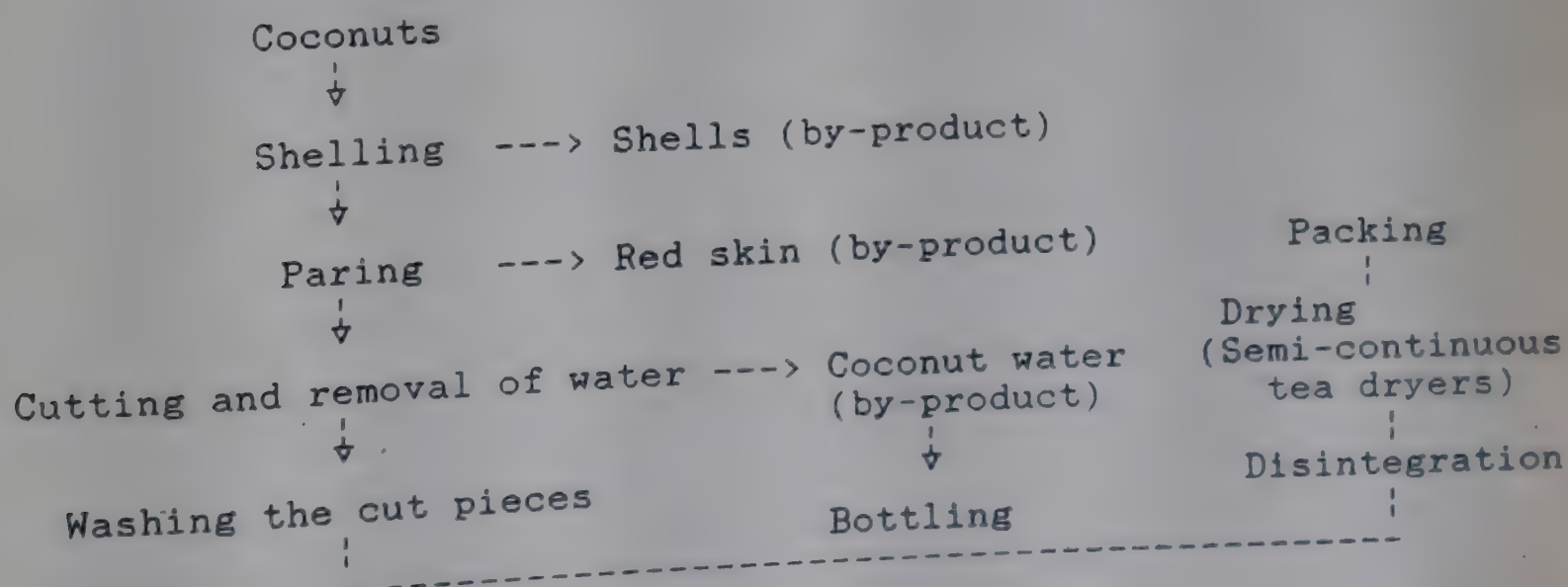
4. Raw materials and packaging

Coconuts HDPE bags
Wooden tea chests

5. Process in brief

Fully matured coconuts are used for the manufacture of desiccated coconut:

The main steps involved in the process are i) shelling, ii) paring, iii) removal of coconut water, iv) washing, v) disintegrating, vi) drying and vii) packing.



FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	DESSICATED COCONUT
CAPACITY	HALF TONS PER DAY
WORKING	200 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	0.75
b. Building	4.55
c. Plant and Machinery	7.22
d. Auxillary Equipment	0.75
e. Miscillanious Fixed assets	0.55
f. Preliminary & preoperative exp	1.02
g. Working capital (Margin)	1.5

TOTAL CAPITAL INVESTMENT 16.34

[B] PATTERN OF FINANCING

a. Term loan	10.37
b. Equity	5.97
Debt : Equity	1.7

[C] COST OF PRODUCTION

a. Raw material cost	32.5
b. Packaging material cost	2.75
c. Utility cost	1.91
d. Manpower cost	1.22
e. Factory overhead	0.75
f. Administrative expenses	0.55
g. Financial expences	2.95
h. Depriciation cost	2.1
i. Merchandising	1.12

TOTAL COST OF PRODUCTION 45.85

[D] PROFITABILITY

a. Sales realization	50.25
b. Cost of Production	45.85
c. Gross profit	4.4
d. Taxable income	2.64
d. Net profit	1.19
e. Break even point	54.89

PRODUCTION OF ALCOHOL FROM MAHUA

1. Process : PRODUCTION OF ALCOHOL FROM MAHUA
2. Product : Ethyl Alcohol
3. By-Product : Distillery Sludge
4. Product Consumption Pattern

Ethyl alcohol has the largest volume of usage industrially. Besides its use in alcoholic beverages, it is used as a chemical feedstock for producing acetaldehyde, ethyl ether, acetic acid, ethyl alcohol, ethyl acetate, ethylene dibromide, polyvinyl and rubber accelerators. As a solvent it is next only to water and has a very wide application in lacquers, varnishes, stains, disinfectants, pharmaceuticals, cosmetics and plastics. Distillery sludge which is a by-product of this process can be utilized as cattle feed and in the formulation of poultry feeds.

5. Market Information

In India there is a great demand for ethyl alcohol and there is a ready market. Estimated production of ethyl alcohol in the country is 500 Million Litres, but the actual demand is more than 600 Million Litres which may go upto 1000 Million Litres in the near future.

6. Process in Brief

The process for the production of ethyl alcohol from tapioca consists of four steps, viz. enzyme liquefaction, saccharification under suitable temperature and pH using appropriate enzyme, fermentation using a selected strain of yeast and distillation of the fermented wash.

7. Equipment and Availability

Bucket elevator, grinder (hammer mill) with sieve and pneumatic conveying system, fermentors, filter press, yeast propagation vessels, ferment receiver, distillation system, product receiver, spirit storage tank, cooling tower, boiler, transfer pumps, etc. are the equipments required for this unit. All equipments are indigenously available.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	ALCOHOL FROM MAHUA FLOWER
CAPACITY	2000 Lts PER DAY
WORKING	200 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	1.48
b. Building	15.55
c. Plant and Machinery	46.25
d. Auxillary Equipment	5.15
e. Miscillanious Fixed assets	0.5
f. Preliminary & preoperative exp	5.56
g. Working capital (Margin)	4.41
TOTAL CAPITAL INVESTMENT	78.9

[B] PATTERN OF FINANCING

a. Term loan	51.7
b. Equity	27.2
Debt : Equity	1.9

[C] COST OF PRODUCTION

a. Raw material cost	45.5
b. Packaging material cost	10.25
c. Utility cost	4.82
d. Manpower cost	1.97
e. Factory overhead	3.82
f. Administrative expenses	0.95
g. Financial expences	8.61
h. Depreciation cost	11.89
i. Merchandising	0.44
TOTAL COST OF PRODUCTION	88.25

[D] PROFITABILITY

a. Sales realization	112.5
b. Cost of Production	88.25
c. Gross profit	24.25
d. Taxable income	14.55
d. Net profit	6.55
e. Break even point	42.87

TAMARIND/KOKUM PRODUCTS (Juice Concentrate and Powder)

1. Process : Manufacture of tamarind/kokum products
(juice concentrate and powder)
2. Products : Co-products and by-products
Tamarind juice concentrate,
Tamarind seeds spent residue
3. Product consumption pattern

Tamarind (*Tamarindus indica* L) is an important adjunct/condiment used daily as a sour ingredient in the Indian cookery. India produces about 2.5 lakh tonnes of tamarind pulp per annum, bulk of it coming from the States of Madhya Pradesh, Andhra Pradesh, Tamilnadu and Orissa, and to a limited extent from Bihar, Maharashtra and Karnataka. Pods are harvested once in a year when the crop ripens in winter, they are decuticled deseeded and the resultant pulp is extracted in water for use in a variety of food items like Sambar, Rasam, Puliogare, Chutneys, Sauces, etc., while the seeds are used commercially for the manufacture of sizing powders. The sourness in the tamarind pulp is attributable to tartaric acid (8-18%), malic and citric acids (about 2%). Most of the production is consumed in the country and very little quantity is exported in native or dried condition.

During late sixties, CFTRI developed a process for manufacture of tamarind juice concentrate. This product has become very popular in our metropolitan cities as well as in many other towns. Besides this product is exported in significant quantities mainly to gulf countries.

For better compactness and for greater convenience in use and handling, a method has now been standardized for the production of dehydrated "Tamarind Powder" with a free flowing nature.

Kokum juice concentrate/powder are used as acidulant and colourant (red shade) in culinary preparations like curries, rasam, chutneys, etc. as a ready to use form of kokum fruit. The products can also be used in making beverages.

4. Market Information

The whole production of tamarind pulp, at 2.5 lakh tonnes, was consumed by the domestic as well as by export markets. The tamarind juice concentrate, which is now being manufactured by six units has also been found to have good internal and external markets with around 50 tonnes export during 1983-84. 1012.6 tonnes of fresh tamarind and 5069.6 tonnes of dried tamarind was exported in 1984-85 valued at Rs.0.56 million and Rs.37.20 million respectively. Tamarind powder is presently being manufactured by 4 units based on CFTRI technology. The present market price for the produce is between Rs.20 to 25 per kg.

The present market price of tamarind concentrate is about Rs.10 per bottle of 200 gm.

Kokum powder and juice concentrates, being new products could find good indigenous as well as export market.

Process In Brief

a. Tamarind Powder : Tamarind pulp, as obtained from the trade is manually cleaned, deseeded and fibre is removed. The pulp is

processed under standardized conditions of temperature, humidity and mill-settings in order to obtain an acceptable and hygienic product in powder form possessing good reconstititional characteristics. The product can be packed in HDPE pouches of desired unit packings.

b. Tamarind Juice Concentrate : The process developed at CFTRI consists of extracting all the water solubles from the fruit pulp by boiling with water under optimum conditions, concentration of the clarified extract (under vacuum) to about 65-70% solids and packing in suitable containers. The final product becomes quite viscous and sets to a jam-like consistency on cooling. Tamarind seeds available as a by-product could be converted into tamarind kernel powder which is used for sizing in textile industry.

c. Kokam Juice Concentrate and Powder : The process involves following steps :

Dry kokam rind ----> Cleaning ----> Pulverising ----> Extraction
of juice ----> Concentration ----> Packing of kokam
concentrate ----> Processing under stanardised conditions ---->
Kokam powder -----> Packing

Important equipments include steam jacketted kettles, hydraulic press, forced circulation evaporator, boiler, vibratory filters, SS percolators, shredder/disintegrator, mixers, driers, granulators, etc. All the machinery and equipment are indigenously available.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	TAMARIND/KOKUM PRODUCTS
CAPACITY	1 TON PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	0.75
b. Building	7.35
c. Plant and Machinery	32.25
d. Auxillary Equipment	2.75
e. Miscellaneous Fixed assets	1.25
f. Preliminary & preoperative exp	3.75
g. Working capital (Margin)	3.52

TOTAL CAPITAL INVESTMENT 51.62

[B] PATTERN OF FINANCING

a. Term loan	33.26
b. Equity	18.36
Debt : Equity	1.8

[C] COST OF PRODUCTION

a. Raw material cost	56.25
b. Packaging material cost	8.75
c. Utility cost	4.25
d. Manpower cost	2.65
e. Factory overhead	1.75
f. Administrative expenses	1.85
g. Financial expences	7.65
h. Depreciation cost	8.75
i. Merchandising	3.15

TOTAL COST OF PRODUCTION 95.05

[D] PROFITABILITY

a. Sales realization	120.75
b. Cost of Production	95.05
c. Gross profit	25.7
d. Taxable income	15.42
d. Net profit	6.94
e. Break even point	38.93

INFANT FOOD

Processed infant foods prepared from bovine milks have several advantages over liquid milk because the dried powder is prepared under hygienic conditions and is uniform in quality and composition. As a result they have become very popular.

India was importing large quantities of infant food in the fifties, which were based entirely on cow's milk. After the development by CFTRI, of an indigenous technology to make infant food from buffalo milk, the import of food has completely ceased. Today there are 15 units registered with DGTD. The installed capacity has gone up from 6900 tonnes in 1965 to 48,998 tonnes in 1981. The production during the corresponding years were 5300 and 37,700 tonnes respectively. The capacity utilization of the units during 1981 is 76.9%. Infant food from buffalo milk for the first time in India, has been made by Kaira District Cooperative Milk Producers' Union, Anand, based on CFTRI process.

The process as developed at CFTRI consists of the following steps -

- Collection of good quality milk
- Quality testing
- Pasteurization
- Standardization of fat and non-fat solids
- Addition of buffer salts, etc.
- Incorporation of vegetable fat
- Homogenization of the blend
- Concentration of the blend to a total solid level of 40-42%
- Spray drying of the concentrated milk
- Packing in tins under nitrogen

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT INFANT FOOD

CAPACITY 5 TONS PER DAY

WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	2.6
b. Building	28.9
c. Plant and Machinery	146.5
d. Auxillary Equipment	4.5
e. Miscellaneous Fixed assets	5.22
f. Preliminary & preoperative exp	8.25
g. Working capital (Margin)	35.5

TOTAL CAPITAL INVESTMENT 231.47

[B] PATTERN OF FINANCING

a. Term loan	140.79
b. Equity	90.68
Debt : Equity	1.6

[C] COST OF PRODUCTION

a. Raw material cost	128.5
b. Packaging material cost	65.5
c. Utility cost	22.2
d. Manpower cost	4.6
e. Factory overhead	6.2
f. Administrative expenses	2.2
g. Financial expences	30.5
h. Depreciation cost	33.61
i. Merchandising	2.93

TOTAL COST OF PRODUCTION 296.24

[D] PROFITABILITY

a. Sales realization	342.5
b. Cost of Production	296.24
c. Gross profit	46.26
d. Taxable income	27.76
d. Net profit	12.49
e. Break even point	55.4

CASHEW LIQUOR

Cashew apple (*Anacardium occidentale*) is indigenous to the tropics of Central and South America. It was discovered during the 15th century by Portuguese missionaries who took it to Africa and India.

Due to the strong flavour of the fruit, larger levels of tannin which leaves an astringent taste in the product, a small amount of anacardic acid which is irritating to the throat, cashewapple fruit could not be utilized for various processed fruit products like jams, jellies, candy, fruit juice and squashes. Taking all these factors in view, a fruit liquor (fenni) has been prepared by CFTRI from Cashewapple.

The salient steps for the manufacture of cashewapple liquor (fenni) are as follows :

Cashewapple fruit after collection are crushed and the juice is expressed by a screw press. The juice is sulphited to destroy the undesirable micro organisms and the desired strain of yeast is added and fermentation is carried out in stainless steel tanks fitted with cooling coils. The product after fermentation is distilled in a batch distillation column and the material is blended, filtered, alcohol level adjusted, bottled and labelled.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	CASHEWAPPLE LIQUOR
CAPACITY	5 TONS PER DAY
WORKING	200 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	1.39
b. Building	6.33
c. Plant and Machinery	10.5
d. Auxillary Equipment	2.3
e. Miscillanious Fixed assets	0.72
f. Preliminary & preoperative exp	0.75
g. Working capital (Margin)	1.25
TOTAL CAPITAL INVESTMENT	23.24

[B] PATTERN OF FINANCING

a. Term loan	15.93
b. Equity	7.31
Debt : Equity	2.2

[C] COST OF PRODUCTION

a. Raw material cost	1.8
b. Packaging material cost	1.5
c. Utility cost	0.4
d. Manpower cost	0.98
e. Factory overhead	1.25
f. Administrative expenses	1.79
g. Financial expences	0.75
h. Depriciation cost	1.75
i. Merchandising	1.25
TOTAL COST OF PRODUCTION	11.47

[D] PROFITABILITY

a. Sales realization	16.5
b. Cost of Production	11.47
c. Gross profit	5.03
d. Taxable income	3.02
d. Net profit	1.36
e. Break even point	32.68

BANANA PROCESSING

India with a total production of 3.1 million tonnes of bananas, ranks second among banana growing countries in the world. The major areas of production are the States of Tamilnadu, Maharashtra, Kerala, Assam, Gujarat, Andhra Pradesh and Orissa. More than 50 varieties of banana are grown in India, but commercial cultivation confined to varieties like poovan, dwarf - cavendish, robusta and hill banana, rashbali, nendran, monthe and neypoovam and red banana.

In Maharashtra and Gujarat dwarf, cavendish (Basrai and Harichal) accounts for this bulk of production.

In Maharashtra, Jalgaon, Parbhani, Thane, Aurangabad, Nanded, Poona, Dhulia, Sangli, Usmanabad and Solapur are the districts in which banana is largely grown.

Fruit and vegetable products like squashes, juices, ready-to-serve beverages, snack foods like fried chips, fruit bars from pulpy fruits, give excellent ready-to-eat products with good shelf-life characteristics. The changing food habits with necessitate increased reliance upon the processed fruit and vegetable products.

From banana, the following products can be manufactured :

Fruit bar

Banana powder

Banana brandy

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT BANANA PROCESSING COMPLEX (Brandy,
CAPACITY 100 TONS PER DAY
WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	2.58
b. Building	102.72
c. Plant and Machinery	319.48
d. Auxillary Equipment	192.86
e. Miscellaneous Fixed assets	9.03
f. Preliminary & preoperative exp	47.73
g. Working capital (Margin)	63.11
TOTAL CAPITAL INVESTMENT	737.51

[B] PATTERN OF FINANCING

a. Term loan	470
b. Equity	268
Debt : Equity	1.8

[C] COST OF PRODUCTION

a. Raw material cost	600.55
b. Packaging material cost	100.55
c. Utility cost	197.34
d. Manpower cost	12.8
e. Factory overhead	35.05
f. Administrative expenses	6.84
g. Financial expences	94.23
h. Depreciation cost	113.64
i. Merchandising	11.61
TOTAL COST OF PRODUCTION	1172.61

[D] PROFITABILITY

a. Sales realization	1350.55
b. Cost of Production	1172.61
c. Gross profit	177.94
d. Taxable income	106.76
d. Net profit	48.04
e. Break even point	51.17

ROLLER FLOUR MILL

Products - Maida, soji/rava, atta

By-products - Bran and germ

The process of roller flour milling is done in three steps

- a. Reception, pre-cleaning and safe storage of raw materials
- b. Process for cleaning and treading of the raw materials and preparing the material for grinding
- c. The actual grinding, sifting, purification, etc. till packing of the end products.

The process gives an yield of about 60% maida, 12% soji/rava, 10% atta, 17% bran, 10% germ.

Plant and Equipment

The equipment requir are separator, air lock, detector, destoner, intensive dampener, aspirator, sifter, grinder, roller, purifier, finisher, blower, etc.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT ROLLER FLOUR MILL
CAPACITY 100 TONS PER DAY
WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	3.95
b. Building	109.45
c. Plant and Machinery	255.45
d. Auxillary Equipment	18.75
e. Miscellaneous Fixed assets	5.85
f. Preliminary & preoperative exp	6.35
g. Working capital (Margin)	22.75

TOTAL CAPITAL INVESTMENT 422.55

[B] PATTERN OF FINANCING

a. Term loan	295.09
b. Equity	127.46
Debt : Equity	2.3

[C] COST OF PRODUCTION

a. Raw material cost	875.55
b. Packaging material cost	1.25
c. Utility cost	13.55
d. Manpower cost	12.25
e. Factory overhead	10.75
f. Administrative expenses	3.65
g. Financial expences	80.35
h. Depreciation cost	66.37
i. Merchandising	10.64

TOTAL COST OF PRODUCTION 1074.36

[D] PROFITABILITY

a. Sales realization	1275.75
b. Cost of Production	1074.36
c. Gross profit	201.39
d. Taxable income	120.83
d. Net profit	54.37
e. Break even point	44.45

ONION - POST HARVEST HANDLING AND STORAGE

Onions are considered suitable for storage when the neck is tight and the outer scales become dry and rustle when handled.

Leaf cover method and bunch hanging are found to be optimal curing methods for onions from the three seasonal seasons from the point of development of its colour retention, pungency and reduction in wastage (due to microbial spoilage and sprouting).

Onion bulbs intended for storage must be free from cuts and so must be handled with extreme care. Damage is most commonly manifested as bruising, but in some instances when bulbs split, premature sprouting occurs. Bruising causes increase in respiration rate, thus accelerating weight loss and may encourage infection by disease causing organism.

Pre-harvest maleic hydrazide treatment and post-harvest gamma ray irradiation treatment of onions at 6-9 krad are found to be effective sprout inhibitor treatments.

In Maharashtra, the traditional onion storage structures do not have provision for bottom aeration. If onions sorted (removal of culls) and graded (according to size) are stored in storage having bottom aeration and with depth of the material lesser than 4' losses due to rotting are greatly reduced in comparison to ungraded produce and also storage in structure having no bottom aeration.

Two tier onion storage structures having air-ventillation facility from all sides as constructed by NAFED at Lasalgaon are recommended.

Onions have to be handled carefully and dropped from a minimum possible height. Capacity suggested : 20 tonnes/chawl - 10-20 units of 4 chawls.

Onion sorting and grading can be manual as well as mechanised (receiving ----> flighted rubber belt elevator to receive the produce from the feeder ----> disc soil remover by rotating brushes ----> roller chain conveyor for inspection of produce ----> sorting (removing of culls) on belt conveyor ----> oscillation screen sizer for grading into different sizes ----> collection of graded onion in plastic crates ----> transfer to ventillated storage structures.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	ONION GRADING AND STORAGE COMPLEX
CAPACITY	1600 TONS PER DAY
WORKING	200 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	2.25
b. Building	6.75
c. Plant and Machinery	4.25
d. Auxillary Equipment	0.75
e. Miscellaneous Fixed assets	0.65
f. Preliminary & preoperative exp	0.55
g. Working capital (Margin)	3.25
TOTAL CAPITAL INVESTMENT	18.45

[B] PATTERN OF FINANCING

a. Term loan	10.99
b. Equity	7.46
Debt : Equity	1.5

[C] COST OF PRODUCTION

a. Raw material cost	60.75
b. Packaging material cost	6.25
c. Utility cost	0.35
d. Manpower cost	1.75
e. Factory overhead	0.45
f. Administrative expenses	1.6
g. Financial expences	3.95
h. Depreciation cost	0.55
i. Merchandising	1.25
TOTAL COST OF PRODUCTION	76.9

[D] PROFITABILITY

a. Sales realization	90.25
b. Cost of Production	76.9
c. Gross profit	13.35
d. Taxable income	8.01
d. Net profit	3.6
e. Break even point	30.13

HARD BOILED SUGAR CONFECTIONERY

Hard boiled sugar confectionery are manufactured successfully by few successful brands in the country like Nutrine, Ravalgaon, Parrys, Parle, etc. with the technology available in the country, which is sound enough. The plant suppliers in the country are in a position to offer turn-key services for the plant of desired capacity.

The hard boiled confections include fruitrops, rocks, har gums, lollipops centres, etc. These boiled sweets have a single basic formulation of sugar and glucose syrup with colour, flavour and other functional food additives, all these raw materials being indigenously available. Toffees also can be produced with the existing facilities.

Confections have a growing demand and the existing units are not able to meet the market requirements. The basic raw material, sugar, being abundantly produced in Maharashtra, two units have been suggested of the capacity of 1 ton per shift.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT HARD BOILED SUGAR CONFECTIONERY

CAPACITY 2 TONS PER DAY

WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	1.25
b. Building	7.75
c. Plant and Machinery	26.55
d. Auxillary Equipment	3.75
e. Miscellaneous Fixed assets	1.85
f. Preliminary & preoperative exp	2.35
g. Working capital (Margin)	6.55
TOTAL CAPITAL INVESTMENT	50.05

[B] PATTERN OF FINANCING

a. Term loan	30.86
b. Equity	19.19
Debt : Equity	1.6

[C] COST OF PRODUCTION

a. Raw material cost	65.05
b. Packaging material cost	12.55
c. Utility cost	4.45
d. Manpower cost	5.25
e. Factory overhead	2.25
f. Administrative expenses	2.25
g. Financial expences	7.35
h. Depreciation cost	7.5
i. Merchandising	4.55
TOTAL COST OF PRODUCTION	111.2

[D] PROFITABILITY

a. Sales realization	135.55
b. Cost of Production	111.2
c. Gross profit	24.35
d. Taxable income	14.61
d. Net profit	6.57
e. Break even point	42.37

DISINFESTATION CENTRE

Agricultural commodities especially food materials are liable to storage deterioration due to various agencies like insects microflora, etc. and require protection from these agencies to ensure the year round availability of these commodities for either direct consumption or further processing. Various disinfestation treatments like prophylactic treatment and fumigation of stored material, material handling systems, storage godowns.

The proposed disinfestation centre will produce the disinfestation products like pest-proofing emulsion for gunny bags, minifume tablets, rat bait formulation, cockroach trap and formulations, household insecticides, rat burrow fumigants. The Centre would offer the disinfestation services on charge basis for food grains, storage structures and material handling systems by applying techniques based on above products. The centre would be preferably located in agricultural produce market committee premises.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

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PROJECT	DISINFESTATION SERVICES
CAPACITY	100 TONS GRAIN DISINFESTATION PER D
WORKING	240 DAYS PER ANNUM

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[A] CAPITAL INVESTMENT RS IN LAKH

✓ a. Building Advance (ON RENT)	0.5
✓ b. Plant and Machinery	4.75
✓ c. Auxillary Equipment	0.25
d. Miscellaneous Fixed assets	0.4
e. Preliminary & preoperative exp	0.3
f. Working capital (Margin)	0.5
✓ TOTAL CAPITAL INVESTMENT	6.7

[B] PATTERN OF FINANCING

a. Term loan	4.43
b. Equity	2.27
Debt : Equity	2

✓ [C] COST OF DISINFESTATION

✓ a. Raw material cost	5.75
b. Packaging material cost	1.2
c. Utility cost	0.75
d. Manpower cost	0.75
e. Factory overhead	0.55
f. Administrative expenses	1.24
g. Financial expences	0.55
h. Depreciation cost	
i. Merchandising	
TOTAL DISINFESTATION COST	10.79

✓ [D] PROFITABILITY

a. Service realization	11.75
b. Cost of service	10.79
c. Gross profit	0.96
d. Taxable income	0.58
d. Net profit	0.26
e. Break even point	69.93

=====

OIL MILL

The unit will basically handle the edible oil-rich raw materials like groundnut, sunflower, safflower, linseed, sesame available in the region for expeller pressing to obtain edible grade oil and oil cake. The oil obtained can be used directly for edible purpose or further refined to get the refined grade oil. The oil cake can be used in animal feed formulations. Groundnut oil can be subjected to filtration through filter press using aflatoxin decontamination filter pads, a technique standardised by CFTRI, Mysore. With the existing facilities, edible oilseed flour (eg. groundnut flour, sunflower flour, sesame flour) can be produced with the relevant oilseed pre-crushing treatments standardised by CFTRI, Mysore. Edible oilseed flour can be directly blended with other cereal flours for consumption to increase protein intake and also used in manufacture of protein rich food products.

The machinery for oil extraction is indigenously available.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	OIL MILL
CAPACITY	18 TONS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT

RS IN LAKH

a. Land and Land development	1.26
b. Building	12.36
c. Plant and Machinery	17.79
d. Auxillary Equipment	4.25
e. Miscellaneous Fixed assets	4.66
f. Preliminary & preoperative exp	2.97
g. Working capital (Margin)	31.9

TOTAL CAPITAL INVESTMENT	75.19
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[B] PATTERN OF FINANCING

a. Term loan	30.24
b. Equity	44.95
Debt : Equity	0.7

[C] COST OF PRODUCTION

a. Raw material cost	864.01
b. Packaging material cost	52.26
c. Utility cost	5.67
d. Manpower cost	5.14
e. Factory overhead	8.58
f. Administrative expenses	2.31
g. Financial expences	31.17
h. Depriciation cost	6.11
i. Merchandising	1.95

TOTAL COST OF PRODUCTION	977.2
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[D] PROFITABILITY

a. Sales realization	1185.5
b. Cost of Production	977.2
c. Gross profit	208.3
d. Taxable income	124.98
d. Net profit	56.24
e. Break even point	41.3

COCONUT OIL MILL AND SHELL POWDER PLANT

The unit will process copra into oil and oilcake by expeller pressing. The process flow sheet is as follows :

Copra ----> Cutting/disintegration ----> Pre-treatment ---->
Expeller pressing (two stage) ----> Oil and cake ----> Filtration
of oil ----> Packing of oil in tins and cake in gunny bags

Coconut oil mill unit can also consider a profitable unit manufacturing coconut shell powder (by crushing and pulverising of coconut shell to fine powder) which has a very good application as a compound filler for synthetic resin glues and as a filler and extender for phenolic moulding powders. It is extensively used by manufacturers of decorative laminate boards. The average annual requirement in the country is about 1800 tonnes and is not met by the manufacturers in the country.

The main steps involved in coconut shell powdering are
Cleaning of coconut shells ----> Defibring ----> Crushing
----> Pulverisation ----> Sieving and grading ----> Shell
powder ----> Packing.

The machinery for coconut oil milling and coconut shell powder manufacture is indigenously available.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT COCONUT OIL MILL

CAPACITY 45 TONS OF COPRA PER DAY

WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	8.21
b. Building	25.65
c. Plant and Machinery	55.68
d. Auxillary Equipment	11.23
e. Miscillanious Fixed assets	4.56
f. Preliminary & preoperative exp	4.56
g. Working capital (Margin)	25.67
TOTAL CAPITAL INVESTMENT	135.56

[B] PATTERN OF FINANCING

a. Term loan	79
b. Equity	56.56
Debt : Equity	1.4

[C] COST OF PRODUCTION

a. Raw material cost	2240.68
b. Packaging material cost	110.45
c. Utility cost	14.56
d. Manpower cost	12.45
e. Factory overhead	6.71
f. Administrative expenses	5.67
g. Financial expences	15.68
h. Depreciation cost	16.4
i. Merchandising	24.23
TOTAL COST OF PRODUCTION	2446.83

[D] PROFITABILITY

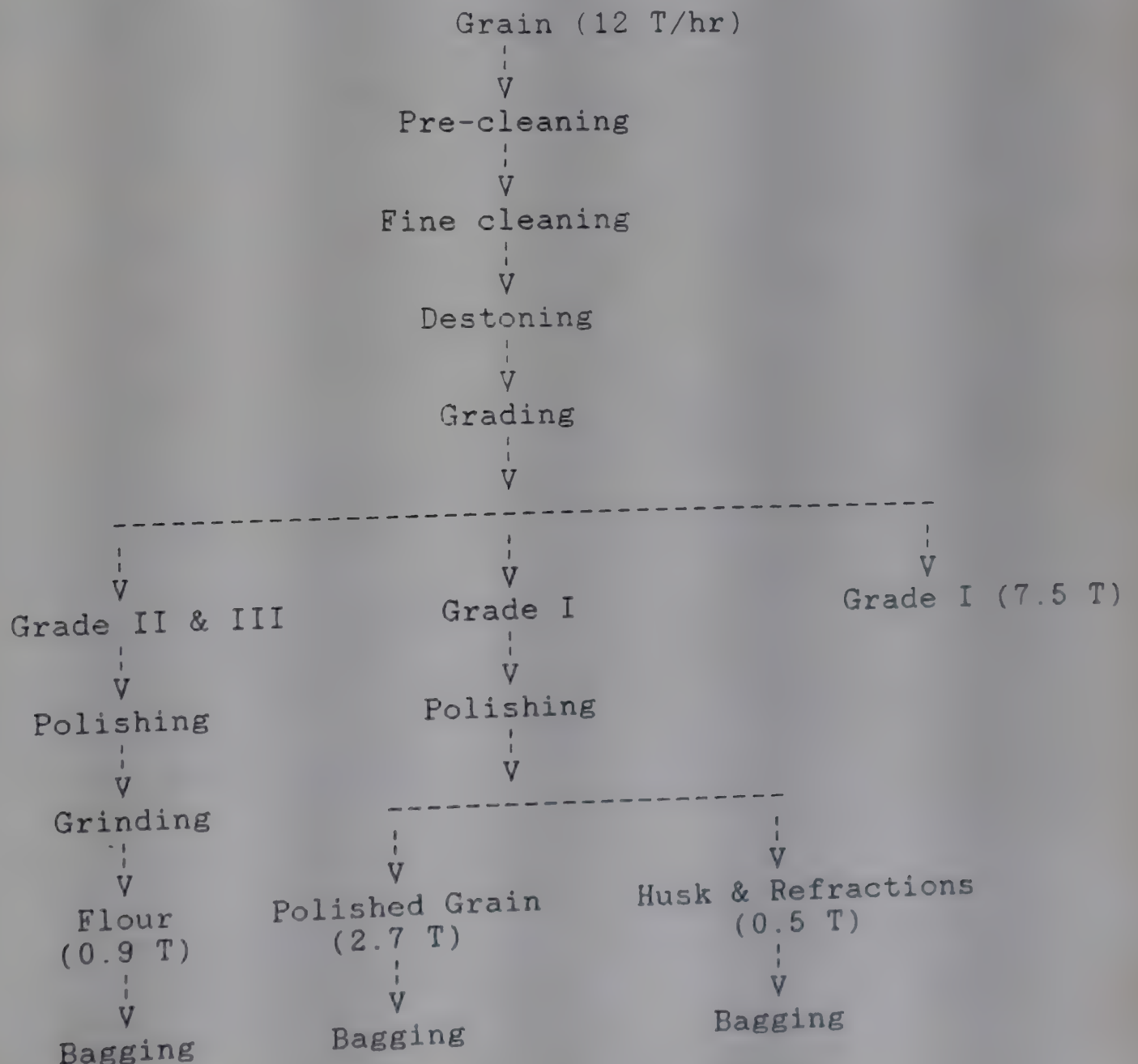
a. Sales realization	2650.75
b. Cost of Production	2446.83
c. Gross profit	203.92
d. Taxable income	122.35
d. Net profit	55.06
e. Break even point	57.86

PRIMARY GRAIN PROCESSING CENTRE

Cereals and millets contain 8-15% of husk/bran which is fibrous and not good to eat. Removal of husk/bran improves palatability and digestibility of the grains.

The primary grain processing centre suggested will be located in the premises of Agriculture Produce Market Committee and will consist of the following systems :

1. Grain cleaning system (including weighing & bagging)
- 12 Tonnes/hr
2. Grain polishing system - 3 Tonnes/hr
3. Grain mill (including weighing & bagging) - 1 tonne/hr



FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT PRIMARY GRAIN PROCESSING CENTRE
CAPACITY 192 TONS PER DAY
WORKING 100 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	1.74
b. Building	51.3
c. Plant and Machinery	51.72
d. Auxillary Equipment	3.81
e. Miscellaneous Fixed assets	0.55
f. Preliminary & preoperative exp	6.21
g. Working capital (Margin)	6.33

TOTAL CAPITAL INVESTMENT 121.66

[B] PATTERN OF FINANCING

a. Term loan	81.84
b. Equity	39.82
Debt : Equity	2.1

[C] COST OF PRODUCTION

a. Raw material cost	336.05
b. Packaging material cost	2.2
c. Utility cost	0.75
d. Manpower cost	0.9
e. Factory overhead	2.08
f. Administrative expenses	1.25
g. Financial expences	10.66
h. Depreciation cost	5.74
i. Merchandising	0.25

TOTAL COST OF PRODUCTION 359.88

[D] PROFITABILITY

a. Sales realization	402.8
b. Cost of Production	359.88
c. Gross profit	42.92
d. Taxable income	25.75
d. Net profit	11.59
e. Break even point	24.84

MANUFACTURE OF EDIBLE GROUNDNUT FLOUR (Expeller Pressed)

Groundnut (in shell) are fed to a bucket elevator which feeds the material to a destoner-cum-decorticator. The kernel thus obtained are fed by gravity to a vibratory grader for the separation of immature kernels while grading them in different grades according to the size. The different grades are collected and bagged manually and stored for further processing.

In order to ensure a light coloured product, it is necessary to effect total removal of red skin or cuticle, which is known to contain the goitrogenic factor. This is accomplished by giving a mild roasting of the graded kernels in a continuous roaster under controlled conditions. The roasted kernels are rubbed between a moving belt and a rubber lined stationery plate for the separation of skin and germs, germs are separated over a vibratory sieve, while the skins are blown off by aspiration and collected by a cyclone separator. The split kernels are spread over a horizontal belt for manual picking of kernels, either infected or with the skin on.

Selected kernels are elevated and fed to the conditioning unit of a screw expeller wherein these are conditioned by steam for maximum recovery of oil. Expelling of these kernels yields a buff coloured cake suitable for human consumption. The cake, thus, obtained is allowed to cool and stored and ground in a hammer mill whenever required.

The oil obtained from expeller is first passed over a vibratory sieve for the removal of foots or coarse suspended solids, and then passed through a pressure filter of the plate and frame type. The filtered oil is packed in tins/barrels as per requirement.

The undersize/immature kernels, germ fraction and rejected kernels are pooled together and after sufficient quantities have accumulated. These are passed through expeller for the recovery of the oil. The oil so obtained would be of poor quality and can be used after refining. The cake obtained is also of poor quality and should be sold for fertilizer use.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT EDIBLE GROUNDNUT FLOUR
CAPACITY 5 TONS OF FLOUR PER DAY
WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	4.52
b. Building	35.75
c. Plant and Machinery	25.68
d. Auxillary Equipment	8.75
e. Miscillanious Fixed assets	2.75
f. Preliminary & preoperative exp	5.45
g. Working capital (Margin)	12.45
TOTAL CAPITAL INVESTMENT	95.35

[B] PATTERN OF FINANCING

a. Term loan	58.09
b. Equity	37.26
Debt : Equity	1.6

[C] COST OF PRODUCTION

a. Raw material cost	218.7
b. Packaging material cost	7.74
c. Utility cost	2.46
d. Manpower cost	2.56
e. Factory overhead	5.28
f. Administrative expenses	1.14
g. Financial expences	10.37
h. Depreciation cost	10.74
i. Merchandising	2.59
TOTAL COST OF PRODUCTION	261.58

[D] PROFITABILITY

a. Sales realization	317.07
b. Cost of Production	261.58
c. Gross profit	55.49
d. Taxable income	33.29
d. Net profit	14.98
e. Break even point	37.28

ASEPTIC PACKAGING OF TOMATO AND OTHER FRUIT JUICE CONCENTRATE

Aseptic processing and packaging of fruit products in World market is well-accepted and command premium quality price. This technology produces high quality product which is readily acceptable in the markets. A complete system of aseptic processing from the point of receiving of raw materials, washing, preparation, aseptic filling, packaging of finished products and storing in box is available.

The general process involved are washing of fruits, crushing in a fruit crusher, hydraulic pressing and juice recovery. The juice is passed through a centrifuge then pasteurised and cooled before subjecting it to evaporation to obtain concentrate.

A percent of the vapour condensate is evaporated and passed through an aroma recovery system and the aroma concentrate thus obtained is added back to the concentrate to obtain full flavour or the aroma concentrate is preserved separately to be mixed later at the beverage packing centre.

The concentrate obtained is aseptically filled into bag-in-box, closed and labelled.

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT ASEPTIC PKG OF FRUIT JUICE CONCENTRATE

CAPACITY 3 TONS CONCN PER HOUR

WORKING 300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT		RS IN LAKH
a. Land and Land development		18.5
b. Building		152.17
c. Plant and Machinery		677.98
d. Auxillary Equipment		62.55
e. Miscellaneous Fixed assets		17.47
f. Preliminary & preoperative exp		84.91
g. Working capital (Margin)		92.24
TOTAL CAPITAL INVESTMENT		1105.82

[B] PATTERN OF FINANCING

a. Term loan	696.5
b. Equity	409.32
Debt : Equity	1.7

[C] COST OF PRODUCTION

a. Raw material cost	269.96
b. Packaging material cost	134.41
c. Utility cost	62.42
d. Manpower cost	56.06
e. Factory overhead	47.8
f. Administrative expenses	45.96
g. Financial expences	128.6
h. Depreciation cost	165.07
i. Merchandising	45.51
TOTAL COST OF PRODUCTION	955.79

[D] PROFITABILITY

a. Sales realization	1150.42
b. Cost of Production	955.79
c. Gross profit	194.63
d. Taxable income	116.78
d. Net profit	52.55
e. Break even point	44.6

MODERN SLAUGHTER HOUSE

The proposed slaughter house will be set up to provide good quality meat and from healthy animals slaughtered under hygienic conditions. According to the present practice in the slaughter houses, owner or contractor engages a butcher and brings the animals to slaughter house, where anti-mortem inspection is done by a vegerinary surgeon. The animals are killed, cleaned and eviscerated by the butcher. At present, the dressing is done on the floor where the facilities for washing drainage are inadequate with the result that whatever blood is spilled over floor comes in contact with the dressed meat giving rise to high bacterial contamination. Also, there is no facility for collection of the blood. A post-mortem examination is conducted by the veterinary surgeon who inspect and grades the dressed meat for retail distribution. The viscera, head, feet and sin are taken away by the owner himself to dispose it off on his own. The only by-product left is blood which is being wasted. The unit should be preferably located outside the periphery of a city/town.

Requisites

1. Should have adequate space for preslaughter accomodation, receiving of animal, lairage space
2. Facilities for carrying out ante- and post-mortem examination
3. Adequate facilities should be there for humane slaughter
4. Good facilities for flaying, draining and washing of the carcasses

- . Separate areas for dressing cattle, sheep and goat
- 6. Proper facilities for inspection and disposal of condemned meat
- 7. Facilities for supply of water under pressure
- 8. Provision for handling slaughter house by-products at a future date
- 9. Adequate space for chilling and frozen storage to be built later

Units in Abattoir

- 1. Reception area or resting grounds
- 2. Lairages (recommended space - cattle 2.8 sq.m and small animals 0.6 sq.m. per animal)
- 3. Slaughter halls (separate space for cattle, sheep and goat)
- 4. Ancillary accomodation (stomach and intestine cleaning, suspected meat inspection room, condemned meat retention room washing and cloth changing room for the workers, hide and skin storage room).

FINANCIAL ESTIMATE AND ECONOMIC FEASIBILITY

PROJECT	MODERN SLAUGHTER HOUSE
CAPACITY	100 GOATS PER DAY
WORKING	300 DAYS PER ANNUM

[A] CAPITAL INVESTMENT RS IN LAKH

a. Land and Land development	1.4
b. Building	4.45
c. Plant and Machinery	10.5
d. Auxillary Equipment	3.5
e. Miscellaneous Fixed assets	0.65
f. Preliminary & preoperative exp	1.45
g. Working capital (Margin)	2.25
TOTAL CAPITAL INVESTMENT	24.2

[B] PATTERN OF FINANCING

a. Term loan	15.38
b. Equity	8.82
Debt : Equity	1.7

[C] COST OF PRODUCTION

a. Raw material cost	10.55
b. Packaging material cost	2.25
c. Utility cost	1.65
d. Manpower cost	0.58
e. Factory overhead	0.85
f. Administrative expenses	0.25
g. Financial expences	3.75
h. Depreciation cost	2.2
i. Merchandising	0.5
TOTAL COST OF PRODUCTION	22.58

[D] PROFITABILITY

a. Sales realization	29.65
b. Cost of Production	22.58
c. Gross profit	7.07
d. Taxable income	4.24
d. Net profit	1.91
e. Break even point	41.8

Recommendations &

Conclusion

RECOMMENDATION AND CONCLUSION

Agriculture dominates the economy of the State. The State, although grows a variety of foodgrains and horticultural crops, is yet to develop sufficient agro-based industries to process these commodities.

If these commodities are properly processed and preserved, it will convert into different value-added products, resulting in bringing Maharashtra in the higher economy status of the country.

During the survey undertaken by CFTRI, Mysore in the 30 Districts of Maharashtra, it has been observed that considering the resources available, present industrial status and local consumption patterns and needs of both primary and processed food products, around 582 agro-based units can be set up. Among the identified industries

- Primary grain processing and disinfection centre has been given prime importance considering the enormous losses occurring in various stages of handling and marketing. These centres have been preferred to be located in the vicinity of the important Agriculture Products Marketing Centre (APMC) in the respective Districts of the State.
- Fruit and vegetable grading and packing centre - Horticultural crops which is a most perishable commodity have been given importance, considering the growing demand of cleaned, graded and packed fresh fruit, it is suggested to set up around 90 units located in the horticulture crops growing Districts.
- We have suggested few capital intensive projects like 100 T/day cap. banana processing complex and 24 T/day cap. aseptically packed tomato & fruit juice concentrate complex in resource-rich areas.
- Economic survey conducted by the Directorate of Economics and Statistics, Maharashtra, reports that the total projected population of Maharashtra by 2001, will be approximately 8.7 crores. To meet the food requirement of the population, in a consumable form, it is suggested to set up modern rice mills, dal mill, oil mill, flour mill and allied industries at different locations identified in the State.
- Demand based industry has also been identified and proper localities recommended in the earlier chapter.

- It is also observed that there is a change in the trend of cultivation which has made some Districts surplus in particular commodity - like onion in Nasik, grapes in Nasik, Solapur, Sangli, banana in Jalgaon, pomogranate in Solapur District and soyabean in Kolhapur.

The above factors have also been considered while identifying the units.

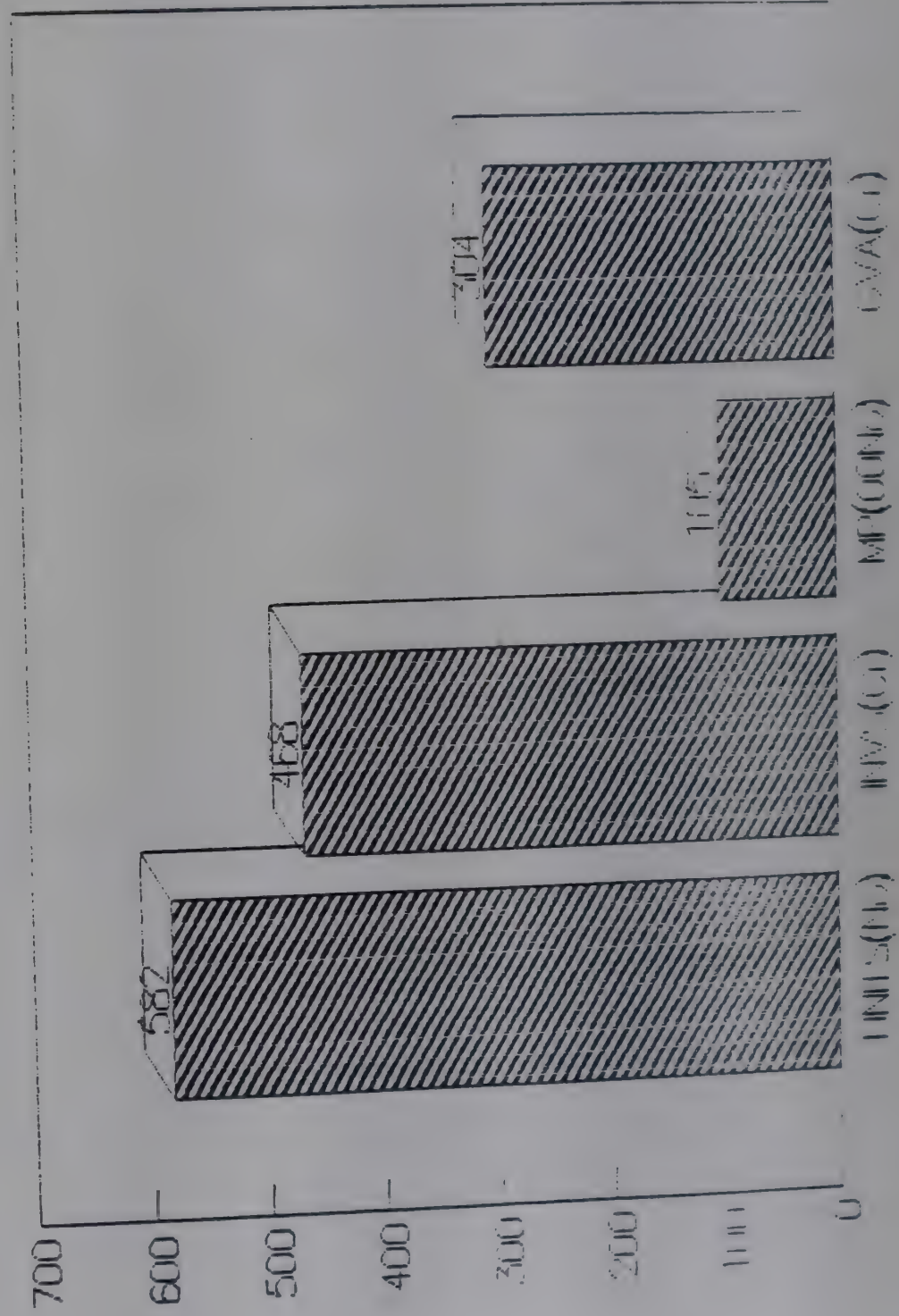
Processing of few forest produces viz. mahua, tamarind, cashewapple has been considered and few units based on these resources have been suggested in the areas rich in these resources.

A consolidated table showing the investments, profitability, manpower potential and cost benefit analysis of recommended units has been presented.

Investment opportunities for individual entrepreneurs also exists on products/processes and their probable locations (districts) have been presented in a consolidated table.

The bar diagram presented gives the total number of units (582), identified with an investment of Rs.468 crores, generating 10539 employment in the State. The gross value added has been estimated around Rs.304 crores.

Cost Breakdown Analysis of Recommended Units



Annexes

[illegible]

CITY COMPRISING POPULATION ABOVE ONE LAKH

SL NO	NAME OF CITY	POPULATION	SL NO	NAME OF CITY	POPULATION
1	BOMBAY GR	8243405	15	NANDED	191269
2	NAGPUR	1302066	16	AHMADNAGAR	181210
3	PUNE	1203351	17	SANGLI	152389
4	SOLAPUR	514860	18	JALGAON	145335
5	NASIK	429034	19	KALYAN	136052
6	THANE	389801	20	ICHALKARANJI	133751
7	KOLHAPUR	351392	21	BHUSAWAL	132142
8	AURANGABAD	316421	22	JALNA	122276
9	ULHASNAGAR	273668	23	CHANDRAPUR	115777
10	AMRAVATI	261404	24	BHIVANDI	115298
11	MALEGAON	245883	25	LATUR	111986
12	AKOLA	225412	26	PARBHANI	109364
13	PIMPARI	220966	27	DOMBIVALI	103222
14	DHULE	210759	28	GONDIA	100423

TOWN COMPRISING POPULATION BELOW ONE LAKH

SL NO	NAME OF CITY	POPULATION	SL NO	NAME OF CITY	POPULATION
1	YAVATMAL	89071	15	USMANABAD	39068
2	WARDHA	88495	16	BULDHANA	35914
3	SATARA	83336	17	GADCHIROLI	15692
4	BEED	80287	18	ALIBAG	14051
5	BHANDARA	56025	19	KUDAL	7198
6	RATNAGIRI	47036			

REGULATED MARKETS

District	Name of regulated markets
(1)	(2)
Greater Bombay	.. Bombay.
Thane	.. Murbad, Shalapur, Bhiwandi, Paighar, Kalyan, Vasai.
Raigad	.. Karjat, Panvel, Pen, Roha, Khalapur (Khopoli), Mahad, Ambegaon, Mangaon, Murudj.
Ratnagiri	.. Ratnagiri
Sindhudurg	..
Nashik	.. Ghoti, Lasalgaon, Malegaon, Nandgaon, Simar, Satana, Yevla, Nashik, Kalwan, Chandwad, Manmad.
Dhule	.. Dhule, Dondaicha, Shirpur, Nandurbar, Shahada, Sakri, Nawapur, Taloda.
Jalgaon	.. Jamner, Dharangaon, Amalner, Jalgaon, Parola, Chalisgaon, Chopda, Bodwad, Pachora, Raver, Bhusawal, Yawal.
Ahmadnagar	.. Ahmadnagar, Kopergaon, Shirampur, Rahuri, Sangamner, Shevgaon, Pathardi, Jamkhed, Shrigonda, Nevasa, Parner.
Pune	.. Baramati, Khed, Nira, Bhore, Pune, Shirur, Indapur, Junnar, Daund, Manchar, Talegaon-Dabhade.
Satara	.. Koregaon, Karad, Phaltan, Satara, Vaduj, Patan, Lonand, Dahiwadi, Wai.
Solapur	.. Sangli, Tasegaon, Islampur, Khanapur-Vita, Atpadi
Solapur	.. Solapur, Mohol, Karmala, Kurduwadi, Akkalkot, Barshi, Akhij, Pandharpur, Mangarvedha, Sangola.
Kolhapur	.. Kolhapur, Gadhinglaj, Jaysingpur, Vadgaon (Peth).
Aurangabad	.. Aurangabad, Vajapur, Lasur Station, Paithan, Kannad, Jalgaon, Gangapur, Soyegaon.
Jalna	.. Jalna, Ambad, Bhokardan, Mantha, Partur.
Parbhani	.. Parbhani, Manwat, Sailu, Gangakhed, Purna, Basmath, Hingoli, Akhada-Balapur, Jintur, Kalamnuri, Pingali-cattle market.
Beed	.. Beed, Ambejogai, Dharur, Georai, Manjalegaon, Parli, Vajinath, Kada, Patoda.

District		Names of regulated markets	
(2)		(3)	
Nanded	..	..	Nanded, Mukhed, Umri, Dharmabad, Bhokar, Kinwat, Hadgaon, Loha, Deglur, Mukhed, Kundalvadi, Naigaon, Kandhar
Osmanabad	..	..	Kalamb, Osmanabad, Murum, Paranda, Bhoom, Tuljapur.
Latur	..	..	Latur, Udgir, Nilanga, Ahmedpur, Deoni cattle market, Ausa, Handargulli-cattle market, Renapur-cattle market
Buldana	..	..	Malhapur, Nandura, Shegaon, Khamgaon, Jalgaon-Jamed, Deulgaonraja, Chikhli, Mehkar, Lonar, Sangrampur, Mutala.
Akola	..	..	Akola, Akot, Telhara, Murtijapur, Karanja, Washim, Risod, Malegaon, Balapur, Patur, Mangrulpir, Barchi Fakli, Manora.
Amravati	..	..	Amravati, Dhamangaon Railway, Daryapur, Anjangaon, Surji Achalpur, Warud, Morshi, Dharam, Chandur Bazar, Chandur Railway, Tiwsa, Nandgaon-khandeshar.
Yavatmal	..	..	Yavatmal, Ghatanji, Pandharkaoda, Darwaha, Wani, Digras, Bori-Arab, Umarghed, Pusad (Cotton and grain) Ralegaon, Nere, Mangaon, Moregaon.
Wardha	..	..	Wardha, Sindi, Pulgaon, Arvi, Hinganghat, Asri.
Nagpur	..	..	Katol, Bhivapur, Narkhed, Saoner, Ramtek, Umred, Kalmeshwar, Nagpur, Mandhal.
Bhandara	..	..	Gondiya, Bhandara, Tirora, Amgaon, Lakhani, Pavani, Tumsar, Lakhandur, Arjuni, Morgaon.
Chandrapur	..	..	Chandrapur, Warora, Mul, Brahmapuri, Sindewadi, Nagbhir, Rajura, Chimur.
Gadchiroli	..	..	Gadchiroli, Armori, Aheri.

Source.—Deputy Director of Marketing, Government of Maharashtra Bombay.

LIST OF MAJOR PROCESSES/PRODUCTS
AVAILABLE WITH CFTRI

Process Code	Process/Product
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ANIMAL PRODUCTS

AAP 003	Chicken: Dressing line & products
AAP 006	Chitosan
AAP 009	Corned beef
AAP 012	Egg albumen flakes
AAP 015	Egg powder
AAP 018	Fish meal and oil
AAP 021	Fish products: Thermal processed
AAP 024	Meat gravy : Concentrate
AAP 027	Shark fin rays
AAP 030	Shrimp : Canning of
AAP 033	Shrimp : Freeze drying of

BEVERAGE PRODUCTS

ABP 036	Coffee concentrate
ABP 039	Coffee beverage: Carbonated (including Coffee concentrate)
ABP 042	Coffee/Tea whitener
ABP 045	Flavour blend : Cola
ABP 048	Flavour blend: Orange & lime/lemon
ABP 051	Flavoured tea
ABP 054	Instant tea
ABP 057	Lactic beverage: Cereal based
ABP 060	Liquid fruits (clarified fruit juices - Banana, grapes, guava, cashew)
ABP 063	Malted beverage
ABP 066	Toned milk: With vegetable protein

DISINFESTATION PROCESSES

ADP 069	Durobase formulation
ADP 072	Durofume : Process & formulation
ADP 075	Lindane and by-products
ADP 078	Methyl bromide
ADP 081	Minifume tablets
ADP 084	Pest-proof emulsion

Contd.....

Process Code	Process/Product
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EQUIPMENT & MACHINERY

AEM 087	Citrus juice extractor
AEM 090	Double effect evaporator
AEM 093	Hot air drier: Cabinet/tunnel type for Arecanut, Cardamom, Cashew kernel, Desiccated coconut, Raisins
AEM 096	Maize mill system
AEM 099	Mini grain mill
AEM 102	Mini rice mill
AEM 105	Mini wheat mill
AEM 108	Modern-dhal mill system
AEM 111	Parboiling Plant : paddy
AEM 114	Rice bran stabilising systems
AEM 117	Single effect evaporator : 1000 kg/ 500 Kg evaporation/hr

FRUIT & VEGETABLE PRODUCTS

AFV 120	Fruit bars: Mango, banana, guava, apple
AFV 123	Fruit Cereal: Mango, apple, banana
AFV 126	Fruit juice concentrate/paste mango, pineapple, apple, orange, tomato
AFV 129	Fruit juice powder: Mango, banana, guava, tomato
AFV 132	Fruits/vegetables dehydration: Grapes, banana, onion, potato, peas
AFV 135	Instant pickles: Mango, lime
AFV 138	Jam: Continous production
AFV 141	Papain: Crude, IP, BPC, concentrate
AFV 144	Pectin: From pectinous materials
AFV 147	Strained Babyfoods: Wet or dry fruit, vegetable, meat, egg

CEREAL PRODUCTS

ACP 150	Biscuit formulations: Cocoa, cocoa cream, nutro, high protein
ACP 153	Cereal flakes: Rice, jowar
ACP 156	Instant traditional foods: [Each] Bisi bele bhath, puliogre, [All] sambar ,rasam
ACP 159	Ready mix: Snacks & sweets [each] idli, vada, dosa, chakli, [all] jamoon, jelebi, <u>Cake</u>

Contd.....

Process Code	Process/Product
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MICROBIAL & FERMENTATION PRODUCTS

AMF 162	Alcohol: Banana, cashew apple, mahua flowers, grapes
AMF 165	Alcohol: Tapioca (cassava)
AMF 168	Baker's yeast
AMF 171	Food enzymes : Fungal- [each] amylase, amyloglucosidase (all) pectinase

PLANTATION & SPICE PRODUCTS

APS 174	Annatto dye: Preparations
APS 177	Citrus oils: Deterpenation
APS 180	Cocoa products: Cocoa mass, cocoa butter, cocoa powder
APS 183	Compounded asafoetida
APS 186	Food colours: Natural
APS 189	Garlic powder
APS 192	Kokum: Concentrate & powder
APS 195	Mustard powder
APS 198	Pepper: White & dehydrated green
APS 201	Spice oils: Pepper, ginger, cardamom
APS 204	Spice oleoresins: Pepper, ginger, turmeric ,chillies
APS 207	Tamarind: Concentrate & powder
APS 210	n-Triacontanal

PROTEIN AND SPECIALITY FOODS

APF 213	Infant food: High protein &/or optimised 12% protein
APF 216	Protein isolate: Groundnut, soya
APF 219	Sesame: Dehulling
APF 222	Weaning food: Roller dried

LIST OF SIMPLE PROCESSES
AVAILABLE WITH CFTRI

Process Code	Process/Product
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ANIMAL PRODUCTS

AAP 225	Animal feed: Formulations cattle, poultry
AAP 228	Bacon & Ham: Preparation
AAP 231	Bactopeptone: From fish waste
AAP 234	Chicken products: Sticks, curried, tandoori, kabab
AAP 237	Egg: Extension of shelf-life - egg washing & egg coating
AAP 240	Fish pickles
AAP 243	Fish & Products: Freezing
AAP 246	Fish waste silage
AAP 249	Mackerel: Salt curing, drying
AAP 252	Meat soup cube
AAP 255	Meat tenderisation
AAP 258	Mutton: Conditioning of
AAP 261	Sausage casings: Natural
AAP 264	Sausage: Preparation - meat/fish/chicken/pork

BEVERAGE PRODUCTS

ABP 267	Ginger cocktail
ABP 270	Grundnut milk/curd
ABP 273	Honey beverage: Bottling
ABP 276	Orange comminuted: Beverage base
ABP 279	Pan supari nectar
ABP 282	Sugarcane juice beverage: Bottling

CEREAL PRODUCTS

ACP 285	Curing of new paddy
ACP 288	Maize based preparations
ACP 291	Parboiling of paddy: Dry heat or hot soak method
ACP 294	Paushtik atta
ACP 297	Refined millet flour

Contd.....

Process Code	Process/Product
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CONFECTIONERY & CONVENIENCE FOODS

ACC	300	Baking powder
ACC	303	Biscuit production: Salt & sweet
ACC	306	Bread: Production
ACC	309	Jamun: Canning of
ACC	312	Rasogolla: Canning of
ACC	315	Rasogolla: Soy based

EQUIPMENT & MACHINERY

AEM	318	Air classifier
AEM	321	Heat sealer: Continuous
AEM	324	Leaf cup machine
AEM	327	Paddy crack detector
AEM	330	Papad press
AEM	333	Pest proofing machine
AEM	336	Pulse dehusking machine: hand operated
AEM	339	Strip lacquering machine
AEM	342	Triple roller extractor
AEM	345	Vegetable slicer
AEM	348	Vinegar generator
AEM	351	Volumetric filler

FRUIT & VEGETABLE PRODUCTS

AFV	354	Anti fungal paste
AFV	357	Curried vegetables: Canning of
AFV	360	Fruit jams & jellies: Preparation
AFV	363	Fruit preserves & candies: Preparation
AFV	366	Fruit syrups & squashes : Preparation
AFV	369	Fruit toffees
AFV	372	Fruits & vegetables: Canning of
AFV	375	Fruits & vegetables: Refrigeration & freezing
AFV	378	Litchi products: Squash & canned
AFV	381	Mango ripening: Accelerated process
AFV	384	Muskmelon seeds: Dehulling
AFV	387	Mushroom culture
AFV	390	Pickles & chutneys: Preparation
AFV	393	Pineapple: Osmo-air dried
AFV	396	Potato products: Flour, flat dry chips
AFV	399	Tomato products: Preparation (including ketchup concentrate from tomato paste)
AFV	402	Wax emulsion: Formulation & use

Contd.....

Process Code	Process/Product
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MICROBIAL & FERMENTATION TECHNOLOGY

AMF 405	Aflatoxin decontamination
AMF 408	Vinegar generation :Natural (Including generator design) jaggery,toddy,pineapple waste

PLANTATION & SPICE PRODUCTS

APS 411	Cardamom: Fixation of green colour
APS 414	Cherry coffee: Monsooning
APS 417	Coriander/supari dhal
APS 420	Cocoa beans: Curing of
APS 423	Desiccated coconut
APS 426	Ginger: Dehydration/bleaching
APS 429	Red chillies: Drying of (Including dipsol formulation)
APS 432	Fractionation of red chillies
APS 435	Turmeric: Curing & polishing
APS 438	Walnut : Processing

PROTEIN AND SPECIALITY FOODS

APF 441	Balahar
APF 444	Composite protein food
APF 447	Groundnut flour: Edible
APF 450	Leaf protein: Concentrate
APF 453	Malted weaning food
APF 456	Multipurpose food
APF 459	Soy flour: Edible

A. Brief on the Project and the Consultant

PROJECT : Study of Resources and Potential of Maharashtra State for Food and Allied Agro-Processing Projects

* * * * *

1. Long-term objective

- 1.1 Harness the available agricultural, horticultural, fishery and animal resources of the state and promote their conservation and preservation.
- 1.2 Promote the optimal utilisation of the agro-resources through creation of awareness of the opportunities for their exploitation.
- 1.3 Promote and assist integrated agro-processing projects for better utilisation of the resources and value addition.
- 1.4 Thus promote the dispersal of agro-industries to the rural areas and help in generation of employment, value addition, better utilisation of resources and welfare of the rural areas.

2. Short-term objective

- 2.1 Collect, collate and analyse the data on agricultural, horticultural, animal and fishery resources of the state of Maharashtra.
- 2.2 Assess the prospects for application of scientific methods for conservation and preservation of these resources.
- 2.3 Assess the prospects for the exploitation of these resources by processing into value added products.
- 2.4 Suggest opportunities, systems and projects for the preservation, conservation and value addition.
- 2.5 Examine the techno-economic feasibility and socio-economic costs and benefits of establishing agro-food processing units and complexes in selected prospective centres.

3. Programme of work

- 3.1 Visit of CFTRI Scientists to the principal centres of production of agri-horticultural, animal resources in the state to interact and discuss the present problems and possible solutions.
- 3.2 Collect and collate data on resources from primary and secondary sources.
- 3.3 Chart the production to marketing and consumption pattern and channels for the resources.

- 3.4 Discuss the production and marketing constraints and the economic consequences.
- 3.5 Identify the scientific and technical inputs that will substantially contribute to better conservation and preservation of the resources.
- 3.6 Assess the inventory of technologies and scientific methods appropriate to the needs and quantify the costs and benefits of application.
- 3.7 Identify the technologies and projects for manufacture of value added products.
- 3.8 Analyse the opportunities for marketing value added products from the resources identified.
- 3.9 Compute the quantitative surplus and their trade and channels of utilisation of the resources.
- 3.10 Prepare a techno-economic feasibility report on the identified systems and the model centres for establishing the systems, as well analyse the economic and social costs and benefits.
- 3.11 Conceive projects and complexes of projects with optimal backward and forward linkages and maximal value addition in agro-food processing of the resources.
- 3.12 Analyse the techno-economic feasibility of projects or project complexes of agro-food processing and establish their socio-economic costs and benefits.
- 3.13 Identify and indicate the possible and prospective locations for these projects and project complexes.
- 3.14 Document and present the techno-economic feasibility and social costs and benefits in order to help the Government make investment decisions.

Project consultant : Central Food Technological Research Institute,
Mysore - 570 013.

Consultant's capability :

CFTRI, a nodal R&D organisation has been instrumental to some extent in inducting the technological change, though slow in the Indian food front. The R&D interventions have been effected through a series of inventions virtually accelerating the growth of the national economy. These include developing and making available over 270 technologies appropriate both to small scale and large scale sectors; escort services on technology, engineering, quality and other aspects; development of suitable technical manpower to enhance the capability of the industry to select and absorb the most relevant and latest technology.

Escort services offered are :

- identification of viable projects;
- preparation of detailed project/feasibility/project engineering/technical reports;
- undertaking assignments on studies of regional resources and potential for food and allied agro-processing industries;
- project evaluation for financial and other institutions;
- undertaking consultancy assistance and sponsored R&D projects;
- identification of post-harvest problems of regional food materials;
- product development/improvement and design;
- product testing and quality analysis;
- design engineering services;
- assistance in machinery selection, erection, commissioning and operation of plant;
- free technical advisory services in the areas related to CFTRI R&D efforts;
- assistance in package development / design, identification / selection and evaluation;
- providing special training facility in all areas of food science and technology.

CFTRI has provided technical consultancy by way of preparing project reports, technical reports, project engineering reports, techno-economic feasibility reports, reports on regional resources and potential for food and allied agro processing projects to over 150 clients including industrial entrepreneurs, institutions, government agencies.



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